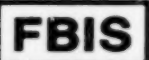


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16 July 1985

USSR Report

AGRICULTURE



FOREIGN BROADCAST INFORMATION SERVICE

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16 July 1985

USSR REPORT AGRICULTURE

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MAJOR CROP PROGRESS AND WEATHER REPORTING

PROGRESS, PROBLEMS IN SEED PREPARATION FOR 1985 CROPS

Moscow ZAKUPKI SEL'SKOKHOZYAYSTVENNYKH PRODUKTOV in Russian No 4, Apr 85
pp 1-3

[Lead article: "Full Readiness for Seed"]

[Text] At the special March 1985 Plenum of the CPSU Central Committee special attention was given to the fact that a severe winter has somewhat delayed the implementation of plan goals within a number of branches. This means that now it is necessary to gather together, mobilize reserves and exert every effort in order to make up for that which has not been completed and to achieve the established goals by the end of the year. This is especially urgent for kolkhozes and sovkhoses which have begun spring sowing as well as for grain-reception and grain-processing enterprises of the USSR Ministry of Procurement, which dependably supplies enterprises with mixed feed, grain forage and feed supplements and which gives considerable aid as regards the seed of grains, oil-bearing crops and grasses.

The last agricultural year was a difficult one for village workers. But despite difficulties, kolkhozes, sovkhoses and grain-reception enterprises dealt successfully with the fulfillment of plans to procure quality winter-grain crop seed. State resources were replenished with such seed at a rate of 1.5 times the plan.

The state seed fund enabled us to allocate, in the established order, the missing portion of good-quality seed of winter grains to kolkhozes and sovkhoses for sowing during the fall of 1984. This helped enterprises to carry out sowing in the optimal period of time on the planned area. The country's winter grains have been sown after better predecessors than last year with good moisture supplies in the soil; for this reason, winter crops began the wintering period in a well-bushed out state in all regions. This provides the basis for expecting a good grain harvest from winter fields.

Procurement and agricultural organs and kolkhozes and sovkhoses had to do considerable work in order to procure the necessary quantity of quality seed of spring grains and oil-bearing crops and to create dependable state seed reserves for 1985 spring sowing.

The collectives of many grain-reception enterprises in the Ukrainian SSR performed good work and achieved high indicators for the procurement of quality seed of spring grains and oil-bearing crops. This enabled them to fulfill the procurement plan for buckwheat by 266 percent, barley--by 237 percent, legumes--by 120 percent and oats--by 109 percent. This was preceded by extensive organizational work on the part of the republic's procurement ministry, by oblast administrations of grain products and grain-procurement enterprises and by state procurement inspectorates. It should be noted that Minister I. I. Shmatol'yan and the ministry board are focusing a great deal of attention on seed procurement.

Despite difficulties, individual oblasts of the Kazakh SSR have dealt adequately with the procurement of seed of spring grain crops. Thus, the grain-reception enterprises of East Kazakhstan, Pavlodar, Semipalatinsk, Kokchetav, Turgay and Kzyl-Orda oblasts have successfully fulfilled plans for the state procurement of quality seed of spring grain crops.

The fulfillment of procurement plans for such crops in the aforementioned oblasts was furthered by the successful work carried out by agricultural and procurement organs. Contractual agreements with seed-farming enterprises were concluded on schedule and there was a timely examination of their correspondence to production plans and to actual crops planted in terms of crop and variety. For example, when an urgent necessity arose for quality seed of spring grain crops in other oblasts of Kazakhstan the workers of grain-reception enterprises of Pavlodar Oblast were assigned the task of finding possibilities for additionally increasing state procurement of quality seed of wheat, barley and other crops. With this goal in mind, all grain-reception enterprises in the oblast were sent telegrams that obliged directors to conclude new contracts with enterprises having the potential to sell the state significantly larger quantities of regionalized seed varieties than stipulated in previous contractual agreements.

Moreover, at the oblast meeting of directors and specialists of grain-reception enterprises a goal was established to procure quality seed for the state from the first batches of grain delivered by enterprises. In rayons seed procurement was controlled by specialists from the oblast administration of grain products.

As a result of good organizational work, kolkhozes, sovkhoses and grain-reception enterprises of Pavlodar Oblast fulfilled the procurement plan for quality seed for all crops: for grain crops--by 120 percent, including spring wheat--by 112 percent, barley--by 101 percent, millet--by 225 percent and buckwheat--by 106 percent.

The grain reception enterprises of the Belorussian SSR, Azerbaijan SSR, Lithuanian SSR, Moldavian SSR, Latvian SSR, Kirghiz SSR, Armenian SSR and Turkmen SSR have fulfilled plans on the procurement of quality seed of spring grain crops.

The grain reception enterprises of Altay Kray and Omsk Oblast have made a large contribution to the development of a state fund of spring grain crops. The grain reception enterprises of Kalinin, Kaluga, Kostroma, Orel and Tula

oblasts and Krasnodar and Stavropol krais significantly overfulfilled plans for the procurement of such seed.

At the same time it should be noted that due to the serious shortcomings existing in the organization of seed farming in kolkhozes and sovkhoses, of the total quantity of seed of grain crops procured by the state over half comes from non-seed farming enterprises and over 90 percent of this seed is not in a conditioned state in terms of cleanness. Of the sunflower seed procured from seed farming enterprises a large quantity is infected with disease or infested with weeds. All of this makes it more difficult to bring seed up to sowing condition, especially up to first and second class standards.

The material-technical base of grain-reception enterprises enables them to clean all procured seed to meet sowing standards by no later than 1 January. But to accomplish this it is necessary that all cleaning machines be in operation immediately after the reception of the first batches of seed. This problem has been solved practically in almost all enterprises of the Ukrainian SSR Ministry of Procurement, where seed is cleaned in a current during procurement.

The collective of the Mogilev-Podol'sk Grain-Reception Enterprise of Vinnitsa Oblast turned to all enterprises of the USSR Ministry of Procurement with a call to complete the procurement plan for quality seed of the 1985 harvest and to prepare this seed for spring sowing. In the appeal the collective pledged to complete the preparation of seed of spring grain crops (excluding corn), legumes and oil-bearing crops by 1 October 1984 and to treat all procured seed in a current during arrival, thereby bringing the seed up to the sowing standards of a particular classification. The enterprise fulfilled its obligations successfully--over 20,000 tons of seed were procured and cleaned in a current until they met first-class sowing standards. The USSR Minister of Procurement, G. S. Zolotukhin, congratulated the collective of the Mogilev-Podol'sk Grain-Reception Enterprise for this noteworthy labor victory.

As of 1 January the grain-reception enterprises of the Ukrainian SSR had prepared 97 percent of the existing quantity of seed; of this quantity, 94 percent met first and second class sowing standards. By this time the grain-reception enterprises of the Belorussian, Azerbaijan, Lithuanian, Latvian, Armenian and Turkmen union republics had completed the cleaning and preparation of seeds.

In the kolkhozes, sovkhoses and grain-reception enterprises of the Belorussian SSR a great deal is being done to improve the variety and sowing qualities of seed of grain crops that has been put into the seed funds of enterprises and procured by the state. The enterprises of this republic will carry out spring sowing this year using grain seed of only the first to third reproductions and primarily of the first class. The tone in seed farming work here is being set by the Belsortsemprom [Belorussian Variety Seed Industry] association, which is headed by a remarkable person and highly-qualified agronomist, G. V. Yadevich.

There are many enterprises in the RSFSR and Kazakh SSR which have successfully carried out the plan for the procurement and timely preparation of seed. However, on the whole the procurement ministries of the aforementioned union republics have not taken appropriate measures to carry out the cleaning and preparation of seed for 1985 spring sowing everywhere and on schedule.

Over 80 percent of the total amount of seed procured in 1984 by the state is concentrated in the enterprises of the RSFSR and Kazakh SSR. Thus, the general indicator of seed quality within the system of the USSR Ministry of Procurement as a whole depends solely on the preparation of seed in the grain-reception enterprises of these republics.

Unfortunately, the level of work with seed here still does not meet imposed requirements. In the RSFSR 68 oblasts, krais and autonomous republics have procured the seed of spring crops. But as of 1 January the enterprises of only 20 oblasts had brought seed up to sowing condition in terms of cleanness and in terms of all indicators of quality--only nine oblasts. The remainder of the administrations of grain products of krais, autonomous republics and oblasts did not manage to complete this important job by 1 January.

An examination of seed preparations for spring sowing showed that there are many shortcomings in the work with seed in individual administrations of grain products and grain-reception enterprises. It was determined that the main reasons for lags in seed preparations included the untimely inclusion of seed-cleaning capacities in operations and the removal of specialists and workers of seed-cleaning shops and plots to other operations.

The directors of the Novosibirsk Administration of Grain Products could not explain why 22 enterprises of a total of 31 which had procured seed were still carrying out the cleaning of seed as of 20 January. As a result of poor work organization only 20,000 tons, or 19 percent, of seed had been brought up to sowing condition as of this time. Not a single ton was brought up to first-class standards and only 6,800 tons, or 30 percent of the total quantity prepared, was brought up to second-class standards.

The grain-reception enterprises of the Altay Administration of Grain Products have a powerful base for seed treatment; they can prepare no fewer than 80,000 tons of conditioned seed monthly. In actual fact, however, only 64,500 tons of seed were cleaned in the course of 3 months (October-November-December); in other words, capacities were utilized by 25 percent.

In Amur Oblast grain reception enterprises cleaned 4,300 tons of seed as of 1 January, or less than half, whereas existing capacities would have allowed the completion of seed preparations before 15 November.

In the Bashkir Administration of Grain Products seed procurement was completed as of 1 October 1984, but only 14 of 22 enterprises participating in procurement began to clean the seed; in Sverdlovsk--2 of 12, and in the Ryazan' administration only 11 of 19 enterprises had begun seed preparations as late as 1 November 1984.

The cleaning of seed has been organized below potential by the enterprises of Kuybyshev, Tyumen, Kemerovo, Chita, Perm and Buryat administrations of grain products.

The preparation of seed in a current as it arrives was not carried out by many enterprises of the Kazakh SSR and significant seed-treatment capacities remained idle. The grain-reception enterprises of Ural and Dzhambul oblasts had prepared only 65 percent of seed as of 1 January, of North Kazakhstan--59 percent, of Aktyubinsk, Dzhezkazgan, Pavlodar and Turgay--45 percent, of Semipalatinsk and Kokchetav--29, of East Kazakhstan--22 and of Kzyl-Orda (rice)--only 4 percent of total seed.

Many of the republic's grain-reception enterprises explain lags in this important matter by the high level of impurities in seed batches, severe frosts and other reasons which they consider objective. However, examinations show that most shortcomings occur as a result of the unsatisfactory organization of work with seed. Thus, in Kokchetav Oblast as of 1 October not a single grain-reception enterprise from among 52 had yet begun cleaning seed and as of 1 November only two enterprises had begun this work. As a result, only 28 percent of seed had been cleaned here by 1 January.

In East Kazakhstan Oblast as of 1 October of last year only one grain-reception enterprise of eight participating in seed procurement had begun cleaning seed. The remaining seven enterprises did not begin this work in the necessary manner and as a result only 22 percent of seed was prepared within the administration as of 1 January.

Data from science and practice attest to the fact that if the moisture content of grain exceeds 14-14.5 percent, there is an activation in the impure grain mass of microflora, of which there is 100 times more in weedy admixtures than in pure grain. As a result there is an increase in the intensity of seed respiration because in microflora this is greater by a factor of 4-5. Undesireable processes such as spontaneous heating up, mold growth, development of microorganisms and increased temperature begin, which in the final analysis sharply decreases the sowing quality of seed--its germination capacity and sprouting vitality. This scientific data must be taken into consideration by all practical workers involved in seed preparations.

A hindrance to increasing seed quality has to do with the fact that a great deal of grain and sunflower seed is procured from non-seed farming enterprises. The local network of such enterprises cannot deal with the fulfillment of the established plans for the production and sale to the state of variety and hybrid seed of grains, oil-bearing crops and grasses.

As a result, 50 percent of the total seed procured by grain-reception enterprises comes from non-seed farming enterprises; this seed is a significant departure from the sowing standard in terms of germination capacity and presence of admixtures that are difficult to remove. This attests to the fact that Glavzagotsefond [Main Administration for Procurement of the Seed Fund] of the USSR Ministry of Procurement, together with USSR Sortsemprom [Association of the High-Quality Seed Industry], was not able to

solve the important problem of concentration and specialization of seed farming.

It sometimes happens in rayons and oblasts that in order to "strengthen" individual unprofitable kolkhozes and sovkhoses with monetary supplements for varieties, procurement plans for the procurement of variety and hybrid seed are assigned to enterprises that are totally incapable of carrying out seed farming on a high level, and this often results in the failure of the plans.

Agricultural and procurement organs must carry out a decisive struggle against such cases and they must strictly watch that procurement plans for seed be assigned only to specialized enterprises.

Specialists from the USSR, RSFSR and Kazakh SSR procurement ministries went to seven oblasts in Siberia and six in the Kazakh SSR in order to eliminate tolerated lags in the cleaning of seed. They were involved in the organization of operations and rendered practical aid as regards the preparation and unloading of seed.

The calibration of corn seed is being carried out in plants in accordance with the confirmed volume--the plan for the fourth quarter of 1984 was fulfilled by 110 percent. Kolkhozes, sovkhoses and other state enterprises in the country will need 800,000 tons of seed corn to carry out spring sowing. This quantity of seed was ready as of 1 February and 96 percent of it meets the standards for first and second class. Up to 300,000 tons of seed corn will be treated with film-forming preparations by the time for spring sowing. The enterprises of the RSFSR's Non-Chernozem Zone, Siberia, the Urals, Northern Kazakhstan, the Baltic States and the Belorussian SSR will essentially be supplied with the seed of early-maturation hybrids.

Great and responsible tasks remain before the collectives of grain-reception enterprises with regard to the procurement of variety and hybrid seed of grains and oil-bearing crops for the harvest of 1985, the final year of the 11th Five-Year Plan. Local procurement and agricultural organs must establish specific measures for the unconditional fulfillment of confirmed plans for the production and state procurement of high-quality seed of grains, oil-bearing crops and grasses from the 1985 harvest. Here most attention must be focused on improving the variety and sowing qualities of seed and on the scheduled completion of cleaning, drying and conditioning of seed to a high level for sowing.

It is essential that agricultural and procurement organs establish constant controls over all crops of newly-regionalized and promising varieties and hybrids of grains and oil-bearing crops while keeping in mind that the entire harvest that was raised does not have to be utilized for seed purposes. In order to deal with the established goal, coordinated and precise work by all links in the agro-industrial complex is required.

In seed farming kolkhozes and sovkhoses and in grain-reception enterprises it is essential to carry out the entire complex of agrotechnical measures on seed plots, paying special attention to the struggle against weeds, pests and plant diseases. The state procurement inspectorate should maintain controls over

the high-level organization of approval of variety crops and over the timely presentation of corresponding documentation to grain-reception enterprises. During the harvest period, laboratory workers of grain-reception enterprises and specialists of state procurement inspectorates must establish controls over the creation, on threshing floors of enterprises, of uniform-quality batches of seed of grains and oil-bearing crops earmarked for sale to the state as well as over the examination of sowing quality and over the correct and knowledgeable formulation of variety documentation for the timely accounting of seed sold to the state.

It is not possible to successfully manage the state procurement of variety and hybrid seed and to achieve an improvement in its quality without a solid and capital preparation of the material-technical base of corn-processing plants, seed-cleaning shops and seed storehouses. For this reason, management workers and specialists of the procurement ministries of union republics, administrations of grain products and state procurement inspectorates are obliged to maintain daily controls over the readiness of enterprises to procure seed from the 1985 harvest and to universally organize the cleaning and flow conditioning of seed to a high sowing level in the course of procurement of the new harvest.

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MAJOR CROP PROGRESS AND WEATHER REPORTING

TOP-DRESSING OF WINTER CROPS DISCUSSED

Minsk SEL'SKAYA GAZETA in Russian 12 May 85 p 2

[Article by I. Bogdevich, director of the Belorussian Scientific Research Institute of Soil Science and Agrochemistry [BelNIIPA] and by N. Semenenko, senior scientific worker of BelNIIPA, under the rubric "Note to the Farmer": "Nitrogen Top-Dressing for Winter Crops"]

[Excerpts] During the spring, the most efficient method of utilizing nitrogen fertilizers for winter grain crops is their fractional application--the first top-dressing should take place after the drainage of surplus intra-soil moisture, i.e., at the early phase of plant vegetation with the appearance of young roots; the second--with the onset of the early booting phase. The fractional introduction of nitrogen fertilizer enables us to avoid intensified one-sided nutrition and contributes to the uniform intake of nitrogen by plants, to its increase use and to its decreased losses.

In the southern rayons of the republic winter grains are in the early shooting stage, and in the central rayons--in the late tillering phase. During this period plants demonstrate increased demandingness for nitrogen nourishment since the establishment of reproductive organs is in progress and the assimilation apparatus is beginning to be formed. On fields where plants have reached such phases of development it is essential to carry out the second nitrogen top-dressing operation. During the second top-dressing, nitrogen doses must be strictly differentiated with a consideration of the nitrogen supply levels.

At the present time many enterprises in Brest, Gomel and other oblasts have begun the diagnostic observation of winter grain crop stands. The results of diagnostics carried out in the republic on an area of 171,000 hectares show that 43.4 percent of the checked winter grain crops need a repeat top-dressing using nitrogen fertilizers.

When winter grains are cultivated according to progressive technology, on some fields there may arise the need to carry out additional top-dressing of crops with nitrogen during the tillering phase. In these cases it is also necessary to carry out diagnostic observations of plants for nitrogen content by utilizing the INDAM indicator. Top-dressing is carried out using a solution of urea (65-70 kilograms in 250-300 liters of water per hectare of area) by means of airplanes or boom sprinklers.

MAJOR CROP PROGRESS AND WEATHER REPORTING

CROP CARE FEATURES IN BELORUSSIA

Minsk BEL'SKAYA GAZETA in Russian 4 May 85 p 2

[Article by V. Samersov, director of BelNIIZR [Belorussian Scientific Research Institute of Plant Protection], A. Andreyev, director of the laboratory to counteract weeds, and K. Padenov, director of the department of chemical methods: "Special Features of Crop Care"]

[Excerpts] In the republic basic care of grain crops has already been completed. Now it is time to clear crops of weeds with the aid of herbicides. Of the herbicides that are permitted, the most frequently used are ammonia salt, 2.4-D ester and 2M-4Kh preparations. In order to eliminate sensitive types of weeds (field mustard, field pennycress, shepherd's purse and pigweed) minimal doses of herbicides are sufficient--1.5 kilograms of ammonia salt and 0.7 kilograms of 2.4-D ester per hectare. If weeds of different sensitivity levels begin to grow among crops, doses are increased to 2 and 1 kilogram respectively.

Weather conditions during the current year resulted in a certain delay in carrying out work to prepare the soil for sowing early spring grain crops. In connection with this, a portion of barley, oats and spring wheat can be sown at the end of the recommended sowing period or even after the optimal period. According to data from the Belorussian NII of Plant Protection, plants that are sown late usually become significantly infested with cereal flies (frit fly, green-eyed fly), the cherry aphid, the opaque carrion beetle and other pests. With the goal of avoiding this we feel it is expedient to begin the chemical treatment of barley in the phase of 3-4 leaves after 20 April in the southern part of the republic, after 25 April in the central zone and after 30 April in the northern zone.

The effectiveness of chemical treatment depends largely on adhering to the norm for expenditure of active liquid and for distributing the herbicide on the area involved. Spray booms achieve the most uniform spraying.

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MAJOR CROP PROGRESS AND WEATHER REPORTING

SPRING FIELD WORK IN BELORUSSIA

Moscow SEL'SKAYA ZHIZN' in Russian 28 Apr 85 p 1

[Article by V. Legan'kov, under the rubric "Spring Routes": "Belorussia: Counting the Hours"]

[Excerpts] Belorussian farmers took on intensive obligations for this year--to produce 26 quintals of grain per hectare, to fulfill the five-year plan on the sale of grain to the state and to significantly replenish grain-forage reserves for livestock raising. The struggle to achieve these goals is being carried out on the spring fields.

The grain farmer's first concern is the winter field. In Belorussia winter rye and wheat occupy over a million hectares, comprising over 40 percent of grain crops. They wintered adequately and have begun to grow everywhere already. Now a great deal depends on spring care. The technology of crop care is well-known--drainage of stagnant water from melted snow, top-dressing with nitrogen fertilizer and harrowing. Agronomists select the agrotechnical methods that are optimal for their enterprises after a consideration of conditions. In places where rye and wheat have begun to grow it is impossible to send land equipment onto swollen fields and so aviation must be utilized. About 250 planes and helicopters, or 2-3 in every rayon, are in operation.

Of the land equipment, regular sowers are preferred because they apply nitrogen fertilizer most uniformly. On loamy soils harrows, which loosen the soil's crust and apply potassium nitrate, are used in units with sowers (without plowshares and seed tubes). On light soil, especially when winter crops are top-dressed with urea, old 24-row grain sowers together with plowshares are used. Such radical top-dressing by means of the slit method is most effective.

One of the most important characteristics of current agrotechnology involves the top-dressing of winter crops not once, but two or even three times. Fractional application of large doses of nitrogen results in a considerable increase in yield and in an improvement of grain quality. This method is practiced first and foremost on 60,000 hectares of winter crops which are cultivated according to intensive technology with the use of permanent tracks. The treatment of all winter crops, which are to yield over 25 quintals per

hectare, with retardants is also becoming indispensable. Kampozan and TUR are used to combat lodging in rye and wheat respectively. RAPO [Rayon Agro-Industrial Association] councils have placed a special responsibility on detachments of Sel'khozkhimiya [Agricultural Chemical Association].

Still most of the work will take place now on fields of spring crops. About 70 million tons of organic fertilizer alone are to be applied; this is 21 tons, or even 30 tons per hectare in some regions. Grains, feed crops and industrial crops will have to be sown at practically the same time.

Success will be determined by the coordinated work of complex technological detachments and their operational links and by the extensive use of cost accounting and brigade contracts, which are now employed on 70 percent of arable land in the republic.

Not only more and more leading enterprises but entire rayons in the southern part of the republic as well, will be able to complete sowing during the first week by carrying out selective sowing.

Last year in the enterprises of Grodno Oblast the main grain crop--barley--yielded an average of 41 quintals per hectare. Without the active aid of RAPO partners, especially of Sel'khozkhimiya [Agricultural Chemical Association] detachments, farmers would not have been able to achieve such a goal. Sel'khozkhimiya procures, ships and sometimes applies organic fertilizer, limes fields, delivers and applies mineral fertilizers and is involved in chemical treatment. In the agricultural department of the party raykom I was cited a characteristic example--in Ozery Kolkhoz a Sel'khozkhimiya detachment doubled the output of barley after applying anhydrous ammonia to it. In answer to my question the kolkhoz chairman, V. I. Sobolevskiy, said the following:

"We do not separate people into 'ours' and 'outsiders.' Everyone has the same routine and everyone is served hot meals in the field at the expense of the kolkhoz. Those who excel are given rewards. It is only because of the help of Sel'khozkhimiya that we are able to complete sowing at the same time this year as last. If only we could attract Sel'khoztekhnika [Agricultural Equipment Association] to the field as well, especially its suppliers and specialized repair enterprises."

This idea was expressed almost verbatim by Ya. E. Ol'ferovich, council chairman of the Korelichskoye RAPO, D. K. Artsimenya, chairman of the Grodno Oblast executive committee and by other directors of different ranks.

In Korelichskiy Rayon I was invited to visit Sovetskaya Belorussiya Kolkhoz, which produced the lowest grain harvest last year--29 quintals per hectare. It turns out that the soil here is rocky and that the quality index of arable land is the lowest in the rayon. But each year the enterprise increases its yield by 3-4 quintals. Today there is confidence in this. The young, energetic chairman, B. S. Myat', shared his "company secret." In the kolkhoz the following order has been established--all specialists and directors of the middle link without exception must establish their own creative monthly plans. The buro of economic analysis confirms the plans and oversees their fulfillment. One month later results are summarized. Those who have

fulfilled their plans receive a 10-percent increase to wages for the month; those who have not--a 10-percent decrease. This type of stimulus has a very good effect on grain fields as well. Already last year 40 quintals of barley were threshed per hectare. Large areas are sown in buckwheat and in legumes for grain in pure form and in mixtures with barley, yielding an adequate return. Large doses of organic fertilizer were used, half of which were applied in the fall to winter crops and late-fall plowed fields. In the spring 20 tons of organic fertilizer were applied and plowed in using only three PB-35 loaders and six spreaders. The enterprise will be first in the region to complete the sowing of spring grains, using trailers made up of three sowers.

During the third 10-day period of April it finally grew warm. Mass field work was begun by the farmers of Mogilev and Vitebsk oblasts and by the northern rayons of Minsk Oblast. Spring field work is gathering force. The hours are being counted.

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MAJOR CROP PROGRESS AND WEATHER REPORTING

SOWING PROGRESS IN BELORUSSIA REVIEWED

Minsk SEL'SKAYA GAZETA in Russian 17 May 85 p 1

[Untitled article]

[Excerpts] In the republic sowing is coming to an end. As of 16 May, spring grains were sown on an area of over 2.6 million hectares, which comprises 84 percent of spring sowing. The torrential rainfall that has occurred everywhere has decreased the pace of field work somewhat. At the same time, an increase in the norm of average daily atmospheric temperatures to 6-9 degrees dictates the necessity to sharply increase the pace of work to complete sowing, especially in Vitebsk and Mogilev oblasts. Extensive work till must be carried out by the enterprises of Postavskiy, Sharkovshchinskiy, Goretskiy and Kruglyanskiy rayons, where 20-25 percent of grain crops still have not been sown.

Examinations show that two-shift work by units, a high level of technical readiness of these units, their servicing during the night, the timely delivery and introduction of seed, fertilizers and fuel-lubricating materials, and the efficient elimination of technical problems under field conditions are not being achieved everywhere.

Grain and legume crops, potatoes and industrial and feed crops have been damaged by torrential rainfall and hail in a number of kolkhozes and state farms of the republic. The nature of crop damage includes numerous washouts of the plowing layer and of soil on slopes, the deposit of eroded soil on flatland, excessive packing of this soil in fields of flax, beets and vegetables, the washing away of ungerminated seed of perennial grasses, grains, legumes and other crops, hail damage to winter crops and the soaking and depression of raised areas. It is essential to organize the resowing of dead crops and replacement of damaged crops, the pre-shoot and post-shoot harrowing on soil that has been made compact by rainfall, the top-dressing of weakened crops and the repeat undersowing of areas already undersown with perennial grasses if deemed necessary after careful examination.

Most enterprises in the republic are carrying out crop care on a wide front. However, the phytosanitary situation in the fields and the rapid growth of weeds require the activation of crop care work. In connection with the compacting of soil special significance is acquired by pre-shoot and post-

shoot harrowing of spring grain crops and the implementation of interrow cultivation of row crops. The second top-dressing of winter crops must be carried out according to the results of plant diagnostics.

The best time has arrived for utilizing herbicides on grain crops and retardants on winter crops. However, the pace of this work is still not high. The weeding of winter wheat crops has not been completed. Retardants have been used to treat a little over one-tenth of the planned area of winter crops. Special attention must be given to organizing the entire complex of work involving the care of crops being raised according to progressive technology.

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MAJOR CROP PROGRESS AND WEATHER REPORTING

FIELD WORK PROGRESS IN ZAPOROZHYE OBLAST

Moscow IZVESTIYA in Russian 11 May 85 p 1

[Article by S. Troyan, Zaporozhye Oblast, under the rubric "The Farmer's Spring": "Without Allowances for Difficulties"]

[Excerpts] In Zaporozhye Oblast we already knew in October of last year that the spring of 1985 would be a difficult one. Usually winter crops make up up to 60 percent of total area in grain crops and provide up to 70 percent of gross grain yield. The extremely dry fall made serious changes necessary.

Enterprises in southern and southeastern rayons were not able to sow winter crops on the area originally allocated to them. Then there were new challenges. A snowless and frigid January was followed by a dangerous thaw. After the thaw there was cold weather again. An ice crust developed on the fields. Finally, we had unprecedented spring floods as compared to recent years.

This was the prologue for the current spring, which arrived 2 weeks later than usual. But the surprises presented by the weather did not daunt grain farmers. Spring has shown that field workers are capable, with a high level of discipline, of withstanding the most difficult trials.

The volume of spring field work increased by almost 20 percent in comparison to last year. But most enterprises in the oblast came to the finish line at the customary time. For example, in Pologovskiy or Gulyaypol'skiy rayons the last hectares were sown on 3-4 May in 1984 and on 6-7 May this year. It was possible to compress time by organizing work in two shifts. There is one important detail--last year's not very abundant harvest did not interfere with the procurement of excellent seed, 99.5 percent of which was first class.

Farmers have set themselves the goal of producing an average of 32.8 quintals of grain per hectare and of selling the state 1,350 tons of grain. Since winter wheat is the main grain it is given special attention. Its top-dressing with mineral fertilizer has been completed and as of 10 May mineral fertilizer had been applied for the second time on half the area.

Today 100,000 hectares of winter wheat are being cultivated in the oblast according to intensive technology. By the second 10-day period of May the treatment of crops against weeds and diseases will be in full swing.

This spring herbicides were applied to intertilled crops by means of the so-called strip method for the first time, which enabled us to considerably decrease the expenditure of expensive preparations and of labor. Right now corn and sunflowers are being harrowed everywhere. Uniform spring grain shoots are pleasing to the eye. Work is in full swing on vegetable plantations. A somewhat greater moisture reserve in the ground than in 1984 inspires hope.

Today there is a man-made rainbow above many fields in the Dnepr area. Irrigation has been organized well in Vol'nyanskiy and Zaporozhskiy rayons. In Primorskiy Rayon, where there are no large irrigation networks, moisture reserves in the soil are replenished by means of "shallow water" that accumulates in ponds. But in Akimovskiy and Veselovskiy rayons sprinklers are being put into operation slowly--workers are counting on the fact that the little rain that fell in late April will "rescue" them. This type of complacency and indifference can be very costly.

At present the oblast's farmers are completing the sowing of corn and are caring for winter crops and perennial grasses. The goal is to unconditionally fulfill plans on the sale of all marketable crops to the state and to supply a sufficient quantity of feed to the branch of livestock raising.

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MAJOR CROP PROGRESS AND WEATHER REPORTING

FIELD WORK PROGRESS IN KHARKOV, POLTAVA OBLASTS

Moscow SEL'SKAYA ZHIZN' in Russian 14 May 85 p 1

[Article by N. Demikhovskiy, Kharkov and Poltava oblasts: "Concern for the Grain Fields"]

[Text] With the goal of increasing the productivity and gross yield of high-quality wheat farmers are continuing to care for winter crops. In many places the area in seed corn is expanding.

What is the situation on grain fields in the Ukrainian forest-steppe, one of the most important grain regions in the republic? There is no one answer to this question, even within a single region. There are many excellent fields of winter wheat, there are others that required replacement of stock and undersowing and still others that needed resowing.

"Most of our attention," said Viktor Yemel'yanovich Kur'yanov, chairman of Kolkhoz imeni Kalinin of Pervomayskiy Rayon, Kharkov Oblast, "is focused on making satisfactory winter crops good and on raising good winter crops to the level of excellent."

Weaker crops were radically top-dressed with large doses of mineral fertilizer--up to 80 kilograms of active substance per hectare. Now that the plants have begun to grow vigorously it is supposed that there is a basis to count on 40 quintals of wheat grain even on these fields.

Wheat cultivated according to intensive technology is especially promising. As any experienced grain farmer, Kur'yanov is reluctant to make large-scale predictions, but even he cannot hide his amazement.

"It looks like yield will equal 60 quintals per hectare."

There are over 4,000 hectares of such crops in Pervomayskiy Rayon. In the oblast these crops occupy over 90,000 hectares. And everywhere an excellent harvest of strong and valuable wheat is promised.

For the Kharkov area this technology is an innovation. Well-founded preparations were made for introducing it and its technological bases were

mastered. Well-fertilized fallow was allocated for it. During cultivation and sowing mineral fertilizer was added to the soil and in the spring radical top-dressing with mineral fertilizers was carried out.

Today the necessary resources for the two coming top-dressing operations of winter wheat, which will make spike crops weightier and improve the quality of grains, have been readied everywhere where intensive technology is being tested, i.e. in every enterprise of Kharkov and Poltava oblasts.

A scientific approach to solving practical farming problems and actions based on precise calculations are becoming more and more characteristic of the work of agricultural specialists. The first secretary of the Sakhnovshchinskiy Rayon party committee, A. Ya. Marakhovskiy, told us how planning for the grain harvest was now carried out in enterprises. Every single field was analyzed by specialists, who with the aid of agrochemical maps calculated the level of natural soil fertility and determined what nutrients were removed from the soil of this particular field by predecessors as well as the amounts and types of mineral fertilizer that would need to be added in order to obtain the assigned quantity of grain. There are 179 fields with winter wheat crops in the rayon. Estimated productivity has been determined for each one of them on the basis of the aforementioned data. It was proposed in rayon agricultural administrations that senior agronomists of kolkhozes and sovkhoses defend their calculations and prove their practicability before a qualified commission. Most were able to do this, some needed to be corrected and others had to be disagreed with and asked for additional work.

"But this was not fortune-telling using coffee grinds," emphasized Aleksey Yakovlevich, "but the result of the assimilation by specialists of a method for predicting the harvest scientifically."

Kharkov and Poltava farmers transferred this experience to corn plantations. A technological map was created for each plantation to indicate a program of action for mechanized links throughout the entire period of corn cultivation. Right now both oblasts are completing the sowing of this crop and are preparing for crop care.

I would like to emphasize one important instance that characterizes the new approach to the agrotechnology of cultivating spike crops. In Poltava Oblast, based on last year's experience, serious attention was given to the selection of hybrids. A path has been taken to introduce, first and foremost, early-maturation hybrids guaranteeing the ripening of seed, an earlier harvest schedule and consequently, a better time for preparing the soil for future winter crops. The resistance of the hybrid to the drooping of ears and to lodging is kept in mind. There are average-maturation types among the hybrids. In the given case the harvest will be formed not so much by the size of ears but by their much greater number resulting from an elevated density of plants per hectare.

The engineering service of kolkhozes, sovkhoses and rayon associations of Sel'khoztekhnika [Agricultural Equipment Association] has made its contribution to sowing preparations. In Novosanzharskiy Rayon of Poltava Oblast, for example, over a dozen combined, broad units were manufactured to

carry out cultivation, sowing of intertilled crops and the application of fertilizers and herbicides. In Dikan'skiy Rayon all kolkhozes have been equipped with cultivators having attachments for applying fertilizers while preparing soil for the sowing of corn.

The struggle for this year's grain is entering the decisive stage in the Ukrainian forest-steppe region. Sowing operations are coming to an end and the time for crop care is approaching. Farmers are full of decisiveness to mark the final year of the five-year plan with worthy results on the grain field and thus to make a worthy contribution to meeting the goals of the country's Food Program.

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MAJOR CROP PROGRESS AND WEATHER REPORTING

FIELD WORK PROGRESS IN ODESSA OBLAST

Moscow PRAVDA in Russian 8 Apr 85 p 1

[Article by V. Vasilets, Odessa Oblast, under the rubric "From Spring Fields":
"Valuing Each Hour"]

[Excerpts] Finally the sun has warmed the soil and the expansive Black Sea spaces have come alive with the hum of motors. The farmers of Odessa Oblast have a difficult job to do. They were forced to wait almost 2 weeks to go into the fields. Time must be compressed. The remaining volume of field work must be carried out within a short period of time.

"The fact is that the caprices of nature this fall interfered with the sowing of winter crops on 60,000 hectares," said the director of the department of agriculture and the food industry of the oblast party committee, G. Chichkan'. "It was dry. What sense is there in putting seed into such soil? Winter prepared a new 'surprise'--part of the winter crops perished. As a result, the area in spring crops is being expanded significantly."

Farmers and the RAPO [Rayon Agro-Industrial Association] service began preparing for their difficult test long before moving out into the fields. In all 450 enterprises agrotechnology courses were offered to machine operators, brigade leaders and link leaders. For the first time each field was given an agrotechnical passport which indicated nutrient reserves, took into account the "removal" of nutrients by a specific crop and determined norms for replenishing nitrogen, phosphorus and potassium losses.

In order not to waste time, observation posts were set up in fields ahead of time, equipment was taken out there and dispatcher communications were set up.

It turned out that Odessa Oblast was in debt to the state with regard to grain sales. Today increased obligations have been taken on--to produce 33.7 quintals of grains per hectare. There is a dependable foundation beneath these obligations. The application of organic fertilizer to fields increased by 2 million tons; 25,000 tons of ammonia water and the same amount of urea have been stockpiled. For the first time, a course has been taken toward intensive technology for cultivating wheat, which has been earmarked to follow fallow predecessors on 109,000 hectares.

The striving toward innovation and creative trouble-shooting in every work place--these are the noteworthy features of spring field work. In northern rayons farmers began to sow peas after completing the harrowing of late-fall plowed fields. The soil was not completely "ripe," but peas do not fear tenacity. But there is one disappointing thing--the seed was being sown poorly. Skilful local workers reequipped plowshares and things began to move.

The Velikomikhaylovskoye RAPO has tried to increase the cooperation of farmers during sowing. Let us look at Sel'khoztekhnika [Agricultural Equipment Association] for example. Previously the rule was that if a kolkhoz did not send a tractor for repairs in good time sanctions were issued against the kolkhoz.

"Last year our enterprises payed 300,000 rubles in fines," complained the first secretary of the party rayon committee, A. Malyshko. "But when Sel'khoztekhnika in turn did not ready a machine on schedule we were not to complain. Why? We established responsibilities. Sel'khoztekhnika not only prepared machines with quality and on schedule, it also took custody of the machine operations in the field."

In enterprises of the Black Sea region there is a shortage of machine operators for two-shift operation of machinery. Now tractor operators have been changed over to a flow-cycle schedule. What is its essence? At present heavy tractors are out on plowed strips. What about cultivators? People were removed from them and a second shift was organized. In addition, about 1,000 specialists came from cities to help. They are working according to conscience. The transport of people to the work place and three hot meals per day have been organized.

Collective contracts are being organized in the oblast. Last year the output per worker within the new system equalled 11,439 rubles as compared to 4,430 rubles in "regular" links. All rayons are now assimilating progressive methods for organizing and reimbursing labor. Two thousand collectives have been created.

The oblast headquarters for the organization of socialist competition receives reports every day about the completion of sowing of spike crops and about the success of machine operators in preparing soil for industrial crops. At the same time there are alarming signals. It is planned to plant corn on 24,000 irrigated hectares in the oblast. The soil will warm up gradually. Good hybrid seed is needed for these plots, but these are only now being sought out. In some places a pattern was followed--fields were worked with harrows and cultivators, although only one operations should have been carried out.

In many enterprises there is a fuel shortage. Instead of a 3 week supply of gasoline there is a 3 day supply. Oblast kolkhozes and sovkhozes have been undersupplied by 25,000 tons.

Today everyone must remember that we pay with grain for our errors in the spring. And this is the highest price to pay.

MAJOR CROP PROGRESS AND WEATHER REPORTING

UDC 621.797:633.11

INTENSIVE WHEAT CULTIVATION IN KRASNODARSKIY KRAY REPORTED

Moscow SEL'SKIYE ZORI in Russian No 2, Feb 85 pp 10-11

[Article by G. Romanenko, doctor of economic sciences, deputy scientific director, P. P. Luk'yanenko Agricultural Research Institute, Krasnodar, and M. Vasyutin, candidate of agricultural sciences, director, cereal and legume variety laboratory: "In the Black Earth Fields of the Kuban "]

[Text] The most important grain crop grown in the Kuban , winter wheat, will cover an area each year of some 1.2-1.3 million hectares, with gross yields running to more than 4-5 million tons. Farms in the kray sell the state roughly 3 million tons of wheat every year, most of which satisfies the criteria for strong and high-grade categories. Despite the extraordinarily unfavorable weather during the spring-winter period over the past year, farmers have obtained yields of 37.6 quintals per hectare and sold the state 2.5 million tons, some 670,000 tons of which are in the "strong" category and over 1,388,000 tons in the high-grade category.

Grain growers in the kray now have adequate supplies of high-yield, high-grade varieties of winter wheat—Bezostaya-1, Krasnodarskaya-57, Kolos, Pavlovka, Prikubanskaya and Olimpiya from the Krasnodar Agricultural Research Institute, for example, Obriy, which is a product of the All-Union Institute of Genetic Selection, or Partizanka from Yugoslavia. Some 83-90 per cent of the area sown to winter crops in the Kuban' each year goes to the strong wheat varieties.

Up until recently the Bezostaya-1 was the number-one variety. In 1984 it was sown on 492,000 hectares. Possessing a high degree of ecological flexibility, this variety will insure good yields of high-grade grain under both favorable and adverse weather conditions, and while consuming sparing amounts of mineral nutrients, it provides stable yields in the case of both late predecessors and compacted soils containing excessive amounts of moisture.

The intensification of grain-growing methods, however, has now focused attention on some new varieties capable of processing high doses of mineral fertilizer and giving higher yields. The most important variety in this case is the Krasnodarskaya-57, a winter-hardy variety of strong wheat which exceeds the Bezostaya-1 with respect to gluten content by 3-4 per cent and in productivity by 3-5 quintals per hectare. Krasnodarskaya-57 was sown over 335,000 hectares in the northern zone and the northwestern part of the central zone for the 1984 harvest, and the winter crop area sown to this variety has been increased to 426,000 hectares. It will be to advantage to introduce

Table 4

Test production results from the application of the intensive method of cultivating winter wheat in Krasnodarsk Kray in 1984

Farm	Method	Variety	Yield, quint/ha
Kalinin experimental farm, Pavlovskiy Rayon	intensive	Krasnodarskaya-57	62.2
	traditional		51.0
	intensive	Olimpiya	60.9
	traditional		61.0
Kuban Kolkhoz, Ust'-Labinskiy Rayon	intensive	Partizanka	62.0
	traditional		54.3
	intensive		57.7
	traditional		43.5
Kuban Sovkhoz, Gul'kevichskiy Rayon	intensive	Estafeta	57.0
	traditional		48.0
M. Gor'kiy Kolkhoz, Tbilisskiy Rayon	intensive	Partizanka	66.6
	traditional		47.0
Pamyat' Lenina Kolkhoz, Timashevskiy Rayon	intensive	Bezostaya-1	41.4
	traditional		40.7
	intensive	Partizanka	44.3
	traditional		42.6
	intensive	Krinitza	39.6
	traditional		36.8
22d Party Congress Kolkhoz, Shovgenovskiy Rayon	intensive	Krasnodarskaya-57	47.3
	traditional		42.6

this variety as widely as possible throughout the kray, and we must then undertake an extensive series of production tests in the neighboring rayons of Rostov Oblast and Stavropol .

The Kolos variety of early-ripening strong wheat deserves more attention. As far as the quality of the grain is concerned, it is comparable with the Bezostaya-1, but it matures 5-6 days earlier and yields 6-10 quintals more per hectare. Kolos has been sown in Krasnodarsk Kray and most of the autonomous republics of the northern Caucasus since 1984. It is now grown for seed development purposes on some 10,000 hectares. This variety is recommended for use everywhere in rayons which have light winters and where the soil gets a lot of moisture.

The regionalized Partizanka and Olimpiya varieties provide fairly high yields under production conditions: yields in the southern and central zones on the average exceed

60 quintals per hectare. In the northern zone, the Olimpiya and Krasnodarskaya-57 varieties are yielding over 40 quintals (see Table 1).

Although they can produce high yields and offer high grain quality, the varieties developed in the Kuban will be able to reach their full potential only if the growers adhere strictly to the procedures prescribed for raising them and, most importantly, if they follow their best predecessors—alfalfa and legumes. When planting follows these crops, yields can reach 45-50 quintals per hectare of high-quality grain with even limited applications of fertilizer. Unfortunately, however, these predecessors will not be widely found within the kray—200-250,000 hectares at most. And despite the fact that growers used every single one of these fields and sowed them with the best varieties of winter wheat, these predecessors are not going to be able to solve the food grain problem.

Table 1

Yields of regionalized varieties of winter wheat in 1984 in the primary natural economic regions of Krasnodarsk Kray

Variety	Central		Northern		Western	
	Kolos		Kalinin		Oktyabr'	
	area, ha	yield, q/ha	area, ha	yield, q/ha	area, ha	yield, q/ha
Bezostaya-1	653	59.9	-	-	-	-
Partizanka	469	63.6	-	-	1983	44.8
Prikubanskaya ...	-	-	-	-	857	47.4
Obriy	-	-	-	-	607	49.3
Olimpiya	-	-	1575	49.0	94	60.6
Krasnodarskaya-57	-	-	1664	42.2	-	-

Row crops remain the primary predecessors to winter wheat. These are preceding some 700,000 hectares of wheat. But without heavy applications of fertilizer, wheat yields after sunflowers, sugar beets and seed corn do not exceed 25 quintals per hectare, and the grain has a low gluten content (19-24 per cent). The results of scientific studies and the practical experience of our leading farms show that 240-300 kilograms of mineral fertilizer in active material with optimum proportions of nitrogen, phosphorus and potassium following these predecessors will produce high yields of winter wheat meeting the standard criteria for strong wheat. In 1984 we saw precisely these fields within the kray supplying strong and high-grade wheat to the state's graneries.

Productivity and gross yields of high-grade wheat within the kray are being held down by the fact that it is extensively sown following other cereal crops, this being the case on over 300,000 hectares. When one winter crop is followed by

another the wheat will be attacked by root rot, powdery mildew, septoria spot and other diseases which decrease yields. A great number of farms and even entire regions in the central part of the kray have ruled out winter cereal crops as predecessors to wheat completely. In accordance with recommendations by scientists from our institute, part of the area sown to the cereal predecessor has been used for winter barley, which is more resistant to root rot and produces high yields. It has still not been possible, however, to eliminate completely the wheat-wheat sequence from the row grain crop rotation.

Table 2

Yields of winter wheat in depleted chernozem following another cereal as a function of cultivation procedure (averaged for the period 1980-1982), q/ha

Planting date	Fertilizer background					
	<u>N₈₀P₈₀K₆₀+N₄₀ in the spring</u>			<u>N₁₆₀P₈₀K₆₀+N₄₀ in the spring</u>		
	without Fundosol	with	+	without Fundosol	with	+
October 1	19.8	34.2	14.4	22.8	36.9	14.1
October 10	28.0	41.1	13.1	30.2	42.2	12.2
October 20	31.0	43.1	12.1	32.1	48.1	16.0

Drawing on the rich fund of experience available internationally in addition to the results of their own studies, scientists at the agricultural research institute in Krasnodar have now proposed the adoption of more effective soil treatment procedures following different predecessor crops, programs of mineral nutrition and methods of protecting crops against disease, pests and weeds. Recent years have seen the implementation of these ideas through extensive application of effective methods of soil treatment and by leaving permanent tracks in the fields.

With the objective of enhancing the effectiveness of the eared cereal predecessor, our scientists have developed a series of agrotechnical and chemical methods of suppressing *Cercospora* root rot. The root rot danger is increased sharply by shallow (8-10 cm) tilling of the cereal stubble, which cuts winter wheat yields in the central and northern zones by 5.6-5.9 q/ha. Unbalanced applications of mineral fertilizer and early planting dates will also increase the vulnerability of the crop to attack and cut productivity.

It has been established experimentally that the highest winter wheat yields are obtained following a cereal crop when the soil is tilled to depths of at least 20-22 centimeters, the crop is planted toward the end of the optimum planting period, a complete mineral fertilizer is applied and when we go to a two-phase application of a systemic fungicide (Fundosol) during the vegetating stage in doses of 0.6-0.8 kilograms per hectare in the tillering stage in the fall and

the stem development stage in the spring or twice, during the tillering and stem-development stages, during the spring (Table 2).

This program of winter wheat cultivation is finding increasingly extensive application on farms throughout the kray. In 1984 it was used on some 216,000 hectares and on a great number of farms contributed to the production of high yields. Over the period 1982-1984, for example, winter wheat sown after cereal crops on the Kalinin Experimental Production Farm in Pavlovskiy Rayon yielded an average of 51.8 q/ha. This is only 2.8 quintals less than yields obtained following peas, the ideal predecessor crop.

In the steppe regions of the kray, it is extremely important when grains account for a high proportion of the crops in a rotation to properly alternate the methods and depths of cultivation both for each individual crop and within the system of rotation. As studies conducted by our institute have shown, to exclude moldboard plowing from the cultivation system entirely will cut winter wheat yields. As compared with the alternation between moldboard plowing and surface tilling, this decrease will run to 6.7 q/ha in the case of predecessor corn, 5.1 q/ha following the spiked grains. And even effective fungicides, Fundosol, for example, will not eliminate this difference in yields (Table 3).

Table 3

Winter wheat yields as a function of cultivation method in a corn-winter wheat-winter wheat rotation sequence, q/ha (based on Krasnodar Agricultural Research Institute data on the central zone for the period 1981-1984)

Method of cultivation	Predecessors			
	corn		winter wheat	
	without Fundosol	with	without Fundosol	with
Annual plowing	42.0	47.0	39.4	46.3
Plane cut and surface tilling only	38.6	46.3	35.6	41.5
Plowing for corn, surface tilling for winter wheat following corn, plowing after spiked cereal crops	45.3	50.3	40.7	48.5

Our institute has developed a scientifically based zonal fertilization program which increases the protein content in the grain to strong-wheat levels and at the same time increasing yields to 50-80 q/ha. To produce one quintal of grain, wheat will require approximately 2.2 kilograms of nitrogen and phosphorus (with respect to active component) and 1.3 kilograms of potassium. The system requires

the application of optimum amounts of both basic fertilizer and fertilizer applied at planting combined with early-spring nitrogen top dressing during the stem-development and milk stages. Each field of winter wheat in the rotation should receive a full application, 40-60 tons per hectare, of semirotted manure during the basic cultivation.

Winter wheat yields of more than 50 q/ha can be produced if during the tillering stage each kilogram of soil in the arable layer contains at least 20 milligrams of nitrates. If nitrate levels are not this high the soil will require additional applications of nitrogen to improve plant nutrition. Amounts of nitrogen to be applied in top dressing can be determined on the basis of leaf diagnosis. Depending on the predecessors and the prevailing weather conditions, the total amount of nitrogen to be applied during the vegetation period can vary between 110 and 160 kilograms per hectare.

The optimum content of labile phosphorus and exchange potassium in high-alkalinity chernozem is 15 and 20 milligrams per 100 grams of soil. In ordinary chernozems these levels will be 2.5-3 and 20 milligrams respectively. Phosphorus and potassium fertilizers must therefore be applied with the objective of bringing these back up to optimum levels. It has been suggested that applications of phosphorus-potassium fertilizers be differentiated as follows: for low P_2O_5 and K_2O contents the recommended application is 100 kilograms of phosphorus and 90 kg of potassium in active ingredient, 80 and 90 kilograms respectively for moderate levels and 60 and 40 kilograms in the case of high levels of these compounds.

The agrotechnical and chemical methods we have been discussing applied to the new high-yield varieties in combination with modern machinery and a program of effective organizational and management procedures have constituted the basis of the intensive winter wheat cultivation program in the Kuban, certification and production testing for which was conducted over the past year on 1000 hectares on six kolkhozes and sovkhoses in the kray.

On all six farms the winter wheat followed a spiked-grain crop, and only on Kuban' Kolkhoz in Gul'kevichskiy Rayon did part of the wheat follow sunflowers, with a part following corn on Kuban' Kolkhoz in Ust'-Labinskii Rayon. To accommodate machinery of domestic manufacture in fields in the intensive cultivation program, the farms left a permanent equipment track every 10.8 meters which is 1800 millimeters wide with two strips (each 450 mm wide).

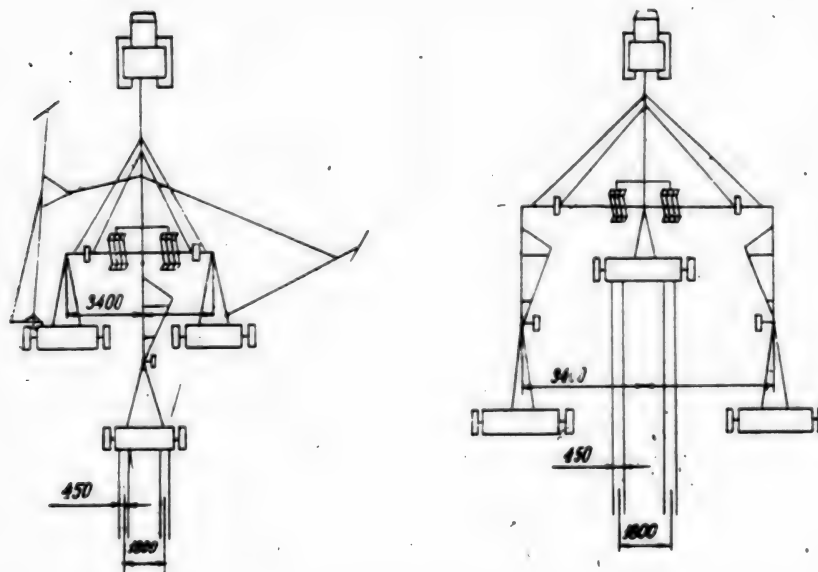
Field operations began in September following the basic soil preparation; applications of fertilizer were accordingly increased during the presowing cultivation in accordance with agrochemical studies with the objective of achieving planned yields of 60-80 q/ha. Mineral fertilizer was applied in the early spring by grain drills (each unit 10.8 m wide) operating along the permanent equipment tracks, with the later top dressing applied by aircraft. Nitrogen top dressing was applied two or three times, the need for the application and the amounts applied being established on the basis of the results of soil and plant analysis. Total doses of fertilizer computed in accordance with the balance method were as follows: phosphorus - 80-340, potassium - 40-165 and nitrogen - 40-167 kilograms of active ingredient per hectare.

Used for the test were all the regionalized varieties of winter wheat and the promising Estafeta and Krinitsa semidwarfs. Seed of only the highest grade was planted, and this was treated by a mixture of fungicides (2 kg TMTD + 1.5 kg Fundosol per ton). The kolkhozes and sovkhozes followed strictly the recommendations concerning the planting dates, norms and depths.

The POU and OPSh-15 adapted for operation on the permanent track along with airplanes and helicopters were employed to apply herbicides and perform a series of crop protective measures. Lontrel and Dialene were found to be highly effective weed killers. Two spray applications of Bayleton provided good protection for the winter wheat leaf system. The use of TUR [transliteration] decreased lodging considerably. Winter wheat on the fields cultivated by the intensive method grew 5-10 days longer than usual.

Both the experimental and the control crops were harvested during the second or third 10-day periods of July. The harvesting method was determined on the basis of field conditions, the extent of lodging and the weediness. When the grain was completely ripe it was direct combined, while a two-phase harveting procedure was employed when moisture levels remained at 30-32 per cent. When the two-phase harveting method is employed on crops cultivated by the intensive system, care must be taken to prevent the windrows from falling on the equipment track. To insure this the wheat must be harvested with the ZhVN-6 mounted harvester followed by another unit with the ZhRS-4.9 harvester.

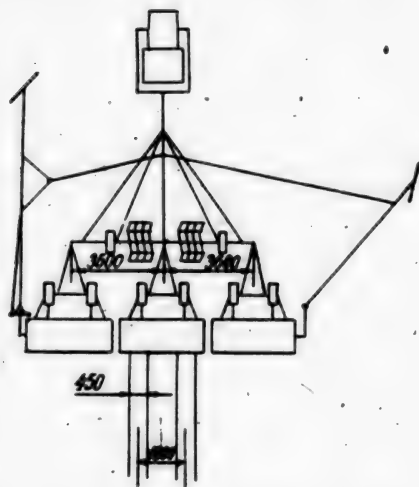
Winter wheat yields from fields cultivated by the intensive method averaged 54.3 q/ha (Table 4).



SZ-3.6 fertilizer-grain drills in configured attachments to the SP-11 hitch

Over an area of 83 hectares following a spiked cereal predecessor crop the Kalinin Experimental Farm in Pavlovskiy Rayon produced 62 q/ha of the Olimpiya and Krasnodarskaya-57 winter wheat varieties. In this instance we see a marked response of the different varieties to the "method" of cultivation. The Krasnodarskaya-57, for example, developed more fungous diseases (powdery mildew, septoria spot, brown rust) than the Olimpiya. Bayleton proved more effective on the Krasnodarskaya-57—it increased yields by 11.2 q/ha.

On Kuban' Kolkhoz in Ust'-Labinskiy Rayon, Hero of Socialist Labor M. I. Klepikov's brigade produced an average of 62 q/ha of the Partizanka variety on 50 hectares following a spiked cereal predecessor, 57.3 q/ha following corn. It was observed that the more effective the system of cultivation and the higher the level of mineral nutrition, the better the quality of the Partizanka and the greater the yield of this variety than the yields produced with the Bezostoy-1.



Ranked attachment of SZP-3.6 fertilizer-grain drill to the SP-11 hitch

On the M. Gor'kiy Kolkhoz near Tbilisi, yields of winter wheat of the Krinitza variety reached 66.6 q/ha over an area of 78 hectares.

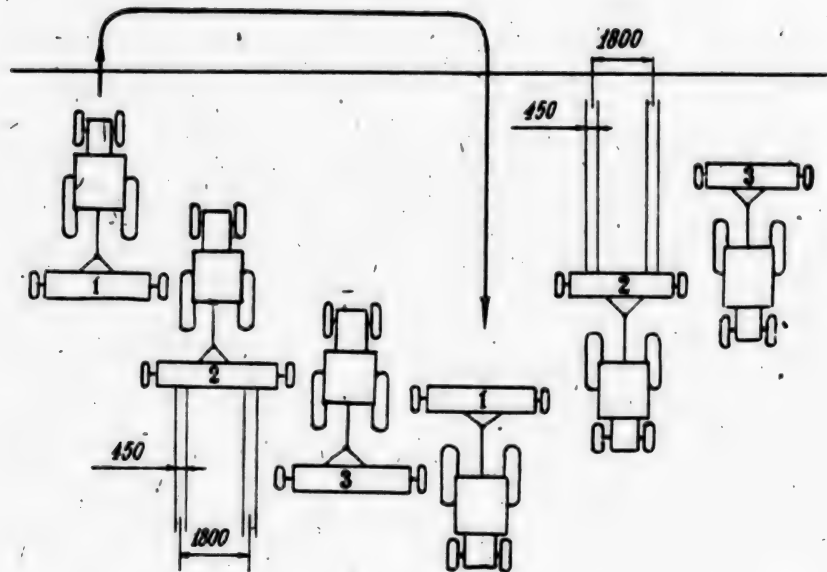
Winter wheat grown by the intensive method on the Kolos Experimental Farm (Krasnodar) yielded an average of 56 q/ha over the period 1981-1983, with yields reaching 61.3 q/ha over the entire sown area of 1260 hectares in 1984. The Partizanka variety produced yields of 72.1 q/ha over 87 hectares, the Estafeta and Krinitza semidwarf varieties 66.4 and 67.3 q/ha.

Data on yields of the semidwarf varieties in intensive cultivation and the results achieved with the cultivation of winter wheat on black fallow permit the conclusion that the short-

stem varieties are better than the taller ones, they are able to take better advantage of the fertility of the soil, resist lodging, are less vulnerable to fungous diseases and are more productive under intensive cultivation.

Together with the substantial increases in productivity achieved with a system of intensive cultivation, we also see improvements in grain quality. In the fields under intensive cultivation, the Kalinin Experimental Farm in Pavlovskiy Rayon and Kuban' Sovkhoz in Gul'kevichskiy Rayon obtained 2.1 and 2.3 per cent more gluten in the Krasnodarskaya-57 and Estafeta varieties than in the control.

Practical experience accumulated with the cultivation of winter wheat with the permanent operating tracks has revealed a number of negative features of this



Operational pattern for Belarus' tractor with single-planter unit

system. These drawbacks need to be kept in mind when any extensive introduction of intensive cultivation is contemplated. In the first place, a farm will have to have high-capacity machinery, most importantly sprayers with a reach of 22 meters. If a farm expects to be able to perform the necessary crop protective measures at the recommended intervals, one sprayer unit should not be used for any more than 300-500 hectares. During planting, the operating track can be left at 21.6-meter intervals, which will substantially reduce the unplanted area.

Let us now consider the fact that field equipment cannot operate in water-logged soil, since the tractors will leave it tightly packed (particularly in the case of soils with a heavy mechanical composition) and to some extent destroy its structure. This will result in the formation of cracks in the summer and lower the productivity of later crops.

For the 1985 harvest, farms in the kray have winter wheat under intensive cultivation on some 480,000 hectares. Most of this area lies in the areas of higher moisture in the central and southern foothill regions, with the wheat following such crops as perennial grasses, peas, silage and grain corn, sunflowers and sugar beets. In the northern zone where soil moisture is inadequate, the system of intensive cultivation is applied to the black and full fallow and the semi-fallow fields.

Strict adherence to proper procedures for the intensive system of winter wheat cultivation will make it possible to increase yields by 10-15 q/ha, gross yields by at least 500,000 tons.

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MAJOR CROP PROGRESS AND WEATHER REPORTING

SPRING FIELD OPERATIONS IN THE KUBAN REPORTED

Moscow TRUD in Russian 17 Apr 85 p 1

[Article by V. Kolesnik, correspondent for kray newspaper SOVETSKAYA KUBAN , Krasnodar: "A Test of Skill, What the Farmers Have To Do this Spring"]

[Text] In response to the CPSU Central Committee Politburo's appeal to get the crops in in the shortest possible period of time, the Kuban's grain farmers have moved quickly and efficiently into their fields to begin their spring operations. They already have their summer crops in on an area of some 580,000 hectares. The soil is being prepared with care, and the farmers here in the Kuban are making every effort to conduct all their operations—the harrowing and the cultivating—in the most timely, efficient manner possible. A million hectares here have already been readied for the crop. The spring field operations in Ust'-Labinskiy, Kanevskiy and Bryukhovetskiy rayons offer a model of the spring field campaigns now under way.

The enormous area sown to winter crops in the Kuban has been well tended. Farmers have almost completed the top-dressing of their winter crops with mineral fertilizer. This procedure is being accomplished both from the air by almost 300 aircraft from the agricultural aviation service and on the ground by the equipment operators with their planters. The grain farmers here are putting forth a maximum effort to bring in a rich harvest.

The grain farmers in the Kuban are facing a major test of their skills and competence this spring. We won't call it by the word which has already been used so often to describe it, that is, a "difficult" spring. Let us say, rather, that it's been unusual. It's been unusual because the long, heavy snows we got this past winter here forced a two-week postponement of the planting of the early summer and a number of row crops. Farmers did not have enough time to complete the resowing of their hard-hit winter crops before they had to begin their full-scale spring field operations. As a result, the work has piled up on them.

So grain growers in the Kuban have had to plan their operational schedules to take these conditions into account. They met the spring fully prepared. And not only fully prepared with respect to equipment. The collective contract is increasingly becoming an essential and dependable component of the operations here and is particularly

necessary where the industrial crop cultivation methods are being employed. Participants in the now universal socialist competition for the best harvests are among the most enthusiastic proponents of these innovations.

Farmers are taking advantage of every single hour of good weather on the first section of Kirov Kolkhoz in Leningradskiy Rayon, where they are already regularly achieving yields of 50 quintals of grain a hectare. Operators have readied all their planters and cultivators for a two-shift schedule.

"Our operators use only the broad-reach implements in their soil-preparation," points out Aleksey Semenovitch Mel'nik, section manager and a Hero of Socialist Labor. "And they were able to get three new machines ready in short order to sow the sugar beets, sunflowers and corn with. This is going to make it possible for us to get these crops in at just the best time."

Farmers in the Kuban are giving particular attention to their winter crops. They have already top-dressed some 1,900,000 hectares of the crops they put in last fall. Winter wheat is being grown by the intensive methods for the first time this year on almost half a million hectares. Grain farmers in the kray have committed themselves to sell the state 4,375,000 tons of high-grade grain this year and so increase their contribution to the effort to implement the country's food program.

"We have now arrived at the critical stage in our winter crop maintenance program," Anatoliy Grigor'yevich Pashkov, deputy director of the Krasnodarskiy Kray executive committee's agricultural production administration, points out. "We not only have to top dress the fields with nitrogen and complex mineral fertilizers, we also have to perform a number of operations required by the intensive methods we have adopted to protect the crop against disease, pests and weeds."

This year's late spring has placed heavy burdens not only on the grain farmers themselves, but also on everybody responsible for supporting their efforts to bring in high yields. It should be pointed out that after the creation of the agroindustrial associations, the partners began to cooperate more effectively with the farmers. A great many RAPO councils have now taken decisions, in accordance with which rayon enterprises and organizations send machine operators and equipment to work on the kolkhozes and sovkhoses for the duration of the planting. The Sel'khoztekhnika association, too, is rendering the farmers of the kray considerable assistance in implementing the intensive cultivation methods. Association enterprises have fabricated hundreds of the wide-reach implements for use on their winter wheat fields. The use of this equipment will improve the quality of the applications and at the same time protect the environment against any harmful effects of the chemicals. A number of industrial enterprises in Krasnodar provided the biggest share of the support required to meet the farmers' needs.

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MAJOR CROP PROGRESS AND WEATHER REPORTING

SPRING BEET FIELD OPERATIONS IN KRASNODAR KRAY DESCRIBED

Moscow SOVETSKAYA ROSSIYA in Russian 14 Apr 85 p 1

[Article by SOVETSKAYA ROSSIYA correspondent V. Udachin: "Shock Detachment"]

[Text] "When you consider the fact that we didn't get our traditional February "windows" you can see how far behind we are in getting our field operations started this year," V. Ye. Chechetkina, agronomist for the Druzhba kolkhoz in Vyselkovskiy Rayon, sums up.

The long, hard winter deprived farmers in the Kuban' of their trump card—time. The reseeding of the winter crops and the sowing of the early summer crops has usually been completed by April, and the farmers are getting their sugar beets in, but this year we are just now beginning to plant. All the field operations have to be done at the same time now. Each hour of each day really is worth its weight in gold this year. But gold to the grain grower is his harvest. Farmers on the Druzhba kolkhoz understand this very well. Despite the fact that the weather allowed them into the fields only in the first days of April around here, they have already gotten an impressive amount of work done. The winter crops have been reseeded as required, the alfalfa and peas are in for the grain and the perennial grasses cultivated.

For the first time now, the Vyselkovskoye RAPO is trying to concentrate the efforts of all the partners of the sugar beet growers on the goal of achieving high levels of production. An agreement on creative cooperation concluded between farms, the sugar refinery and the rayon equipment and chemical supply people sets a target figure of 34 quintals of sugar per hectare. One of the first provisions of the agreement is that the beets have to be planted within four days. Druzhba Kolkhoz is fulfilling this provision to the letter. It got 1000 hectares of beets in over this period. It then proceeded directly to plant its sunflower crop.

The unpredictable weather has thrown the sowing operations off schedule, but a great number of farms have organized their work in two shifts. The soil will be prepared at night and then the seed planted during the day. In the process of adjusting to this difficult spring, the machine operators and specialists have occasionally been able to arrive at new approaches. Farmers in Abinskiy, Slavyanskiy, Krasnoarmeyskiy and Temryukskiy rayons, for example, have tried sowing their alfalfa on top of the snow. The result was good—the crop is solid. Planters on Vostok Kolkhoz in Ust'-Labinskiy Rayon were equipped with attachments for local application of herbicides. Il'ich Kolkhoz in Leningradskiy Rayon created a special shock detachment which will be

responsible for preparing the soil and sowing the summer crops on the irrigated fields. An interesting experiment is now under way on Michurin Kolkhoz in Giaginskiy Rayon: for the fourth year, now, farmers are planting alfalfa together with their corn and getting two or three good cuttings of a rich protein mixture.

In addition to the effort involved in getting the summer crops in, the farmers in the Kuban' are also devoting a great deal of attention to their major crop areas this time of the year—their winter crops. Last fall they sowed some 450,000 hectares, almost one-third of this winter wheat, in accordance with the intensive methods. This is expected to increase their yields substantially. One hectare of winter wheat on the Kalinin experimental farm cultivated by the intensive methods yielded over 11.2 quintals last year, and the grain had a very high gluten content. Specialists and grain growers believe in these new methods. "Intensive" wheat sown in good predecessors with a full dose of fertilizer survived the hard winter in good condition and compared with wheat grown by the traditional methods looks stronger and healthier. February and March, it is true, offered no opportunities to top-dress the winter fields, so everything has to be done now, and very quickly to boot. The question is how much and which fertilizer should be applied to which field?

"We're flying virtually blind in our winter fields now," admits V. Beletskiy, chief agronomist for the Vyselkovskiy Rayon agricultural administration. "We thought, for example, we had applied enough nitrogen back in the fall. But as it turns out, there wasn't even enough on the fields where we planted wheat after the perennial grass. The heavy moisture just washed the nitrogen down to the lower layers of the soil. So these fields need a 'booster' shot. The problem is that we don't know what the dosage should be. Every field is going to be different, you know. And then there's the question of the scientific and technical support required for the new intensive methods. We can determine the nutrient content from soil samples, of course. But who's going to analyze them down here on the farm? Our specialists aren't trained to do this and we don't have all the instruments and equipment required to do it. The Vyselkovskiy people have to take their samples in to Krasnodar, which, luckily, isn't too far away. But what are the farmers in the more remote rayons going to do? But can you really imagine that a single center is going to be able to handle the samples from a thousand different fields? It's clear to me that what we really need now is a fleet of mobile field laboratories."

No less important are the questions of what are the toxic chemicals to be applied with and how are they to be applied? Specifically, what implements should be used? The USSR ministry of tractor and agricultural machine building has yet to offer the grain farmers any suggestions. Sel'khoztekhnika and the experts down on the farm have had to tackle the problem themselves. By early spring farmers in the kray had built over a thousand wide boom-type sprinklers, and industrial enterprises had supplied some 45,000 sprayers for them. These sprinklers are of a variety of designs—some are mounted on wheels, some on runners and some are tractor-mounted. The spring will tell which of these designs is the most successful. The point, however, is that all this should have been undertaken by the USSR ministry of tractor and agricultural machine building. It should have been able to develop a good design in short order, test it and then get a reliable factory-produced machine into series production and not condemn the grain farmers to having to resort to this kind of amateurish craftsmanship. It really doesn't have a role to play in the new industrial methods.

MAJOR CROP PROGRESS AND WEATHER REPORTING

FLOODING THREATENS VOROSHILOVGRAD

Kiev RADYANS'KA UKRAYINA in Ukrainian 27 Mar 85 p 4

[News report phoned in from Voroshilovgrad on 26 March by V. Bochans'kyi: "People Against the Elements"]

[Text] Dozens of streets in this city on the Lugan are flooded by the spring high water. Several industrial enterprises have temporarily shut down operations. Experts claim that the Lugan has not been as high as this in the last hundred years.

The city and rayon flood commissions are coordinating the efforts of workforces to combat the elements with organization, tenacity, and precise, effective actions. Children's and medical establishments have been moved out of the flooding areas, and 2,500 families have been evacuated. They have been provided temporary shelter and food, with no interruptions in food distribution.

It is anticipated that the water will rise 4-5 meters along the banks of the Lugan. Therefore reinforcement work is being conducted around the clock in these areas, and dikes and levees are being built up. Ten thousand residents of Voroshilovgrad are working on these projects. They have trucks, excavators, bulldozers, truck-mounted cranes, watercraft and large quantities of other heavy equipment at their disposal.

In spite of the difficult, tense situation, order and discipline are being maintained throughout the city. People are precisely adhering to the established daily work and living routine. A particularly fine example in this regard is being shown by the workers of the Voroshilovgradteplovoy Production Association. They have formed special emergency teams to combat the flooding. Thousands of diesel locomotive builders, upon ending their work shift, remain to work on flood-protection activities. But the normal work routine continues in the shops. Powerful new locomotives leave the association's gates each day.

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MAJOR CROP PROGRESS AND WEATHER REPORTING

COMBATING EFFECTS OF FLOODING IN NIKOLAYEV OBLAST

Kiev RADYANS'KA UKRAYINA in Ukrainian 27 Mar 85 p 4

[Article by RADYANS'KA UKRAYINA correspondent M. Bidnyna: " Streams in Revolt"]

[Text] Even people who have lived here on the steppes for 100 years do not remember such spring flooding above the Black Sea coast as is happening this year. The thickness of the snow cover ranged from 22 to 30 centimeters, and in addition the snow was lying on ground frozen to a depth of as much as 1 meter. Ice thickness on lakes, reservoirs, ponds and streams ranged from 50 to 60 centimeters. This entire mass of frozen water became a formidable destructive force as soon as the temperature rose above and stayed above freezing.

Within a few days ravines and streams were swollen with meltwater: the Visun, Chernyy Tashlyk, Ingulets, Sinyukha, and others. On the Visun, for example, the water rose several meters, which of course caused flooding in several villages.

Long before the melting of the snow, however, a flood commission was formed in the oblast, headed by E. O. Shorin, deputy chairman of the oblast executive committee. The oblast water conservancy, the oblast water engineering organization, transportation and power engineering organizations, the seaport and riverports were enlisted into flood-combating efforts, and emergency crews and a demolition team were formed. Dams and spillway systems were inspected, and areas of possible flooding were designated. In Bereznegovatskiy Rayon, for example, through which the restive Visun flows, several thousand persons were temporarily relocated. Measures were also taken to ensure uninterrupted operation of livestock units.

Today oblast flood commission headquarters resembles a military combat headquarters. On one wall hangs a map of the oblast, heavy lines on which (just as on field maps) mark the location of the "enemy": rivers, reservoirs, etc. In the most threatened areas there are circles containing red symbols indicating airplanes and helicopters, and black symbols indicating targeted blasting sites. The telephones are constantly ringing. Anatoliy Serhiyovych Anufriyenko, in charge of headquarters, issues orders and instructions crisply and with authority, speaking in an even, calm voice. And there are plenty of

orders to give. Helicopters with demolition teams are "redeployed" from one site on the river to another. Information is received from aircraft reconnaissance flights. Reports come in from water level warning stations along the rivers. Rayon flood commissions request assistance with vehicles and watercraft. All requests are carried out immediately.

Everybody was encouraged by repeated reports that the water level on the Visun was dropping. Flood waters are receding from the villages of Kaluha and Serhiyivka.

The impact of the flooding has been considerably lessened by organized preparations to combat it. In Novobugskiy Rayon, for example, where the large Sofiyevskoye Reservoir lies in the Ingul, the high water caused no damage. The executive committee of the rayon soviet (A. M. Korenchuk, chairman) took resolute measures to prevent disaster: water discharges were adjusted, water was allowed to pass through, and local manpower and resources handled ice hummocks. Twenty-four swans spent the winter on the reservoir. When it became icebound, local residents took care of them.

The people in Zhovtnevyi Rayon are doing an effective job of combating the high water (executive committee chairman A. S. Bulgakova). Even irrigation equipment was used in this rayon to drain off meltwater into discharge channels.

A swift job of evacuating livestock was done on the Kosmos Sovkhoz in Nikolayevskiy Rayon and on the kolkhozes imeni Engels and imeni Karl Marx in Bashtanskiy Rayon, as well as on other farms.

Yesterday evening flood commission headquarters prepared a summary report. In addition to figures on changes in water level on the rivers, it contained the following statement: "There has been no loss of life, no buildings have been destroyed, and no loss of livestock has been recorded." A call was made to the oblast executive committee to determine whether there had been any complaints pertaining to the flooding. They replied that there have been no complaints.

Over most of the oblast streams and the farmers' daily lives are returning to normal.

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MAJOR CROP PROGRESS AND WEATHER REPORTING

INSTRUCTIONS ON PLANTING SPRING CROPS

Kiev SIL'S'KI VISTI in Ukrainian 2 Apr 85 p 2

[Article by M. Drahan, chief agronomist, Main Administration for Production of Grain, Oilseed Crops and General Problems of Agriculture, UkSSR Ministry of Agriculture: "Planting Spring Crops on Frozen-Thawing Soil: From the Experience of the Kolkhoz imeni Shevchenko, Rozdelnyanskiy Rayon, Odessa Oblast"]

[Text] Farming practices followed by a number of kolkhozes and sovkhoses in Ternopol, Khmel'nitskiy, Kirovograd, and Odessa oblasts indicate that sowing spring grain in frozen-thawing soil most efficiently utilizes moisture and substantially reduces total field work time.

A mandatory condition for early planting -- in the fall the field should be treated with the requisite quantity of organic and mineral fertilizers, carefully leveling the ground. This planting method can also be used on acreage containing lost winter crops and perennial grasses.

Workers on the Kolkhoz imeni Shevchenko, in Rozdelnyanskiy Rayon, Odessa Oblast, have acquired exceptional experience in early spring planting. On this farm they begin sowing barley and oats when the field still contains patches of snow, while the soil has thawed to a depth of 4-5 centimeters and is not covered by a crust of ice.

Oat or barley seed, treated in advance, is planted with an SZP-3,6 seed drill, with a caterpillar tractor. At the same time 100 kilograms of nitrofoska [a complete fertilizer] is applied per hectare.

In order to cover with soil the seed planted in the path of the tractor as well as seed which in places has not been planted to the required depth through the frozen soil, a light chain is attached to the seed drill. A heavy chain or harrow is not used. As they say, these "smear" the soil, throwing seed onto the surface. The seed and fertilizer are hauled to the tractor and seed drill rig by tractor or truck.

Grain press drills are used to plant on thawing frozen soil. Coulter disks, working slightly frozen ground, do a good job, uniformly distributing the seed in the drill row. If for various reasons the entire seed material cannot be

put into the soil to the required depth, the field is harrowed at the first opportunity with medium harrows or perpendicular to the drill rows with ryegrass harrows.

The farmers of this kolkhoz have become convinced through their own experience that early sowing as a rule helps boost spring grain yields by 25-30 percent over conventional practices. This spring they were the first in the oblast to commence spring grain planting on thawing frozen soil.

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MAJOR CROP PROGRESS AND WEATHER REPORTING

STATUS OF RECLAIMED LANDS IN BELORUSSIA

Minsk SEL'SKAYA GAZETA in Russian 2 Apr 85 p 3

[Article by V. Kamasin, director of Department of Land Reclamation of the BSSR MSKh [Ministry of Agriculture], A. Meyerovskiy, director of the laboratory on increasing soil fertility of the BelNII [Belorussian SSR Scientific Research Institute] of Soil Science and Agrochemistry, and L. Glytov, director of Vedrich Breeding Plant of Rechitskiy Rayon: "Maximal Return From Reclaimed Lands: The Special Features of Carrying Out Spring Field Work on Peat Bog Soils"]

[Excerpts] The drainage of the swampy bottom land of the Vedrich River in Rechitskiy Rayon began over half a century ago. It was then that a sovkhos was created on the new land. Since that time more than one generation has passed, but the lands of Vedrich Breeding Plant, which are now 74 percent agricultural lands, are increasing rather than decreasing in productivity.

The enterprise has introduced two crop rotations--a nine-field rotation for long-fallow peaty soil and a six-field rotation for a section with little peat. Perennial and annual grasses, occupying over 53 percent of area, are prevalent within crop structure, as are grain crops.

A characteristic feature of the current year is the deep freezing of peat soil. Immediately after the snow melts the enterprise will organize the drainage of surface water from areas in winter crops and in perennial grasses and from fields that are earmarked for early crops. All canals and structures, which number 17 on all the lands belonging to the breeding plant, work to dispose of water as quickly as possible during this time.

Many plots are characterized by a marked microtopography. Often the total area of depression of up to 30 centimeters comprises 25-35 percent. The depth of freezing in micro-depressions is less by 7-10 centimeters and the moisture content is greater. It is important to remember that when stagnant water covers crops for 4-5 days up to 25 percent of the winter rye and winter wheat which has begun to vegetate perishes; perennial grasses, especially leguminous, suffer even more acutely. In order to avoid this phenomenon, fields are systematically levelled in Vedrich Breeding Plant.

This spring drained lands with soil-ground waters close to the surface (less than 50 centimeters) will require constant attention because of the possibility that large amounts of winter crops will be affected by root rots, rust and other diseases. If a crust of ice exists or develops, and such cases have been noted in a number of regions, it must be destroyed by means of ring-shaped rollers or rollers with steel pins-teeth.

In Vedrich Breeding Plant the role and significance of microfertilizers, especially of the copper type, were studied long ago. In its own tests the plant became convinced that producing even an average grain yield is often hindered due to a shortage of copper. We plan to apply potassium-copper fertilizers to grain crops and perennial grasses on a priority basis. For a breeding plant, which is what the Vedrich is, it is extremely important to cultivate full-value feed that is balanced with regard to all indicators, including microelements.

As soon as the top layer of peat bog dries out somewhat the packing of winter crops with heavy rollers will be carried out. This method forestalls the development of cracks on the surface, the tearing of root systems and interference with the capillary rise of moisture, thereby contributing to an increased grain productivity of 2-3 quintals per hectare.

This year, in connection with deep freezing, the full thawing of soil has been delayed by 2-3 weeks. Consequently, early crops will have to be sown "in fragments" everywhere. In the Vedrich workers are ready to complete this work in optimal time. On the state farm the path that was taken included complete soil preparation for spring crops since fall. This yields great advantages during the spring. For example, grains are sown in 3-4 days and potatoes--in 8-9 days. In the final analysis, the harvest profits from this. According to long-term observations, each day that sowing is delayed after the optimal period leads to the underproduction of a quintal of grain per hectare. Optimal sowing time for spring grain crops arrives when the peat soil has thawed to a depth of 4-6 centimeters. Early sowing protects the field from wind erosion and simplifies the battle against weeds, pests and diseases.

In places where workers did not succeed in applying mineral fertilizers in the fall this work is done immediately after the snow melts with the aid of agricultural aviation or land equipment. When the top layer thaws to a depth of 10-12 centimeters discing, packing and sowing are carried out.

In reclamation farming an important role is played by the selection of varieties. These varieties must mature rapidly, must be resistant to lodging, freezing and damage by pests and diseases and must maximally utilize the fertility of the soil. Of the regionalized varieties of barley those that have proven themselves better than others include Favorit, Mami, Roland and Ida, of oats--Bug and Erbgraf and of spring wheat--Leningradka and Belorusskaya-80.

Reclaimed lands are more suitable for the extensive introduction of a technology of programmed cultivation of agricultural crops. We feel that in every enterprise it is important to select fields and plots with well-regulated water-air regimens and to achieve large harvests by means of

utilizing rich experience and knowledge as well as scientific achievements. The introduction of programmed harvests on drained lands is an educational experience in terms of training and management for specialists, brigade leaders and link leaders.

The experience of Vedrich Breeding Plant, Novoye Poles'ye Sovkhoz of Soligorskiy Rayon, Zarya Kommunizma Kolkhoz and 40 Let Oktyabrya Kolkhoz of Ivanovski Rayon, Pobeda Kolkhoz of Vitebskiy Rayon and of many other enterprises convincingly demonstrates what great reserves can be brought into action to increase the productivity of reclaimed lands. On the basis of an analysis of the special characteristics of each field and of a precise consideration of the needs of the crops being cultivated a productivity of 50 quintals of feed units per hectare has become the norm here, and during the best years it reaches 65-70 quintals per hectare.

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MAJOR CROP PROGRESS AND WEATHER REPORTING

CARE OF WINTER CROPS DELINEATED

Minsk SEL'SKAYA GAZETA in Russian 13 Apr 85 p 2

[Article: "Concern For Winter Crops"]

[Text] Right now it is the task of the agronomic service to maximally utilize the existing prerequisites for achieving a large harvest. With this goal in mind it is essential to:

--apply nitrogen fertilizer without delay and to harrow crops that have been damaged by snow mold;

--carry out top-dressing with nitrogen fertilizers at an earlier time with the goal of activating the tillering stage on fields where crops have not bushed well;

--achieve the timely and quality first top-dressing of winter crops using calculated doses of nitrogen fertilizer;

--carry out a second top-dressing operation at the early stage of booting, utilizing the results of plant diagnostics, on fields where it is planned to apply over 60 kilograms of nitrogen fertilizer per hectare;

--harrow winter crops infested with wintering weeds and to apply nitrogen fertilizer only after this has been completed;

--harrow winter rye and winter wheat crops being cultivated on soils with a tenacious mechanical composition;

--treat crops with a predicted yield of over 25 quintals per hectare with growth regulators to prevent lodging on a mandatory basis.

In the struggle against dicotyledonous weeds winter crops should be treated with one of the following herbicides during the tillering phase: 2.4-D ammonia salts (40 percent k. e. [emulsion concentrate], 2-2.5 liters per hectare); 2.4-D butyl ether (43 percent k. e., 0.7-1.2 liters per hectare); 2M-4Kh (80 percent r. p. [Further expansion unknown], 1.3-2 kilograms per hectare); 2M-4KhM (80 percent r. p., 2.5-3.8 kilograms per hectare with an undersowing of clover). With lowered atmospheric temperatures (10-12 degrees)

the preferred herbicide for treatment is 2.4-D butyl ether. For winter wheat infested with the odorless matricary and other weeds resistant to 2.4-D and 2M-4KH preparations, the herbicides 2M-4KhP (50 percent v. r. [Further expansion unknown], 4-6 liters per hectare) and dialen (40 percent v. r., 2-3 kilograms per hectare) should be used.

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MAJOR CROP PROGRESS AND WEATHER REPORTING

FIELD WORK PROGRESS IN BELORUSSIA

Minsk SEL'SKAYA GAZETA in Russian 21 Apr 85 p 3

[Untitled article]

[Text] The front of spring field work is expanding its boundaries. The warming of the ground in Brest, Gomel, and most of Grodno and Minsk oblasts enables workers to carry out the sowing of flax and the planting of potatoes and to begin sowing sugar beets, corn and feed root crops.

As a result of precise organization of the work of equipment and people and of skilful maneuvering of technical resources, many enterprises and rayons in the southern part of the republic have successfully completed the sowing of early spring grains and are in the process of sowing flax and planting potatoes. The enterprises of Luninetskiy, Maloritskiy, Brestskiy, Zhabinkovskiy, Narovlyanskiy, Mozyrskiy and other rayons are leading in sowing operations.

At the same time, the kolkhozes and sovkhoses of Pruzhanskiy, Braginskiy, Buda-Koshelevskiy, Slutskiy, Gluskiy, Svislochskiy and several other rayons tolerate sluggishness and work below their potential.

In the interest of the struggle for large yields during the final year of the 11th Five-Year Plan the following is urgently required:

--a sharp increase in the pace of field work and maximal use of broad and combined units in the preparation of soil and application of mineral fertilizers, and in top-dressing of winter crops, perennial grasses, haylands and pastures;

--if not done already, the recruitment without delay of machine operators from industrial enterprises and other organizations, the assignment of these machine operators to all tractors and the initiation of two-shift work to apply organic fertilizers and to prepare the soil;

--the organization of year-round technical servicing of equipment, carried out during the evenings as a rule;

--providing machine operators and other participants in spring sowing operations with hot food;

--the daily evaluation, by brigade leaders, directors of production sections and agronomists of enterprises, of the quality of accomplished work;

--daily control over the course of soil maturation and selective preparation of the soil beginning with elevated land masses without waiting for the drying out of the entire area;

--the direction of maximal attention at questions related to the preparation of potato seed material for planting, and the organization of careful processing, sun-drying, air-thermal warming and fungicidal pre-planting treatment of tubers.

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MAJOR CROP PROGRESS AND WEATHER REPORTING

DEGREE OF POSSIBLE PEST, DISEASE DAMAGE DISCUSSED

Minsk SEL'SKAYA GAZETA in Russian 25 Apr 85 p 3

[Article by Ye. Kolonitskaya, director of the republic's prognosis laboratory of the BSSR Ministry of Agriculture: "Prediction of Distribution of Agricultural Pests and Diseases in the Republic During the Third 10-Day Period in April 1985"]

[Text] In the republic's southern rayons early varieties of apple trees are in the "green cone" phase or at the verge of entering this phase. The larva of suctorial pests have begun to hatch, the emergence of the apple curculio and hawthorn moth caterpillar have been noted, and ascospores of apple scab are in flight.

During the second 5 days of the third 10-day period of April mass hatching of and damage by the apple aphid, psylla, lackey moth caterpillar and leaf roller are expected in Brest and Gomel oblasts and in the southern rayons of Minsk, Mogilev and Grodno oblasts. The flight of apple scab ascospores and the infection of young apple leaves will continue. In the central zone, the beginning of hatching and damage of suctorial and leaf-gnawing pests is expected in late April to the first 10 days of May; in the northern zone-- during the first and second 10-day periods of May.

Despite the death of leaf-gnawing pests during the winter period, their numbers remain above threshold levels this year.

Considering the great reserve of scab and the large number of leaf-gnawing fruit-crop pests, during the phase of "bud development and separation" it is essential to carry out the spraying of trees with chlorophos or fozalon in a 0.2 percent concentration or with rogor in a 0.15-0.2 percent concentration. In order to protect orchards from scab and other diseases, 400 grams of khometsin or tsineb per 100 liters of liquid should be added to insecticides. In the struggle against scab, "blue spraying" (3-4 percent Bordeaux mixture) during the "green cone" phase is effective.

A potato tuber analysis carried out by specialists of signaling and prognosis points shows that 0.5-6 percent of the seed material in kolkhozes and sovkhoses of Bobruyskiy, Volkovysskiy, Minskiy, Logoyskiy, Starodorozhskiy, Grodnenskiy and other rayons is infected with *Rhizoctonia solani* [brown

patch], phytophthora and bacterial diseases. In Slobodskiy Sovkhoz of Starodorozhskiy Rayon, 1 Maya and Luch Kommuny kolkhozes of Slutskiy Rayon and Kolkhoz imeni Zhdanov of Volkovysskiy Rayon, in some batches of potatoes 2-3 percent of tubers are infected with phytophthora, 1.5-3.5 percent--with wet rot, 0.5-3.5 percent--with dry rot and 18-80 percent--with scab.

With the goal of decreasing plant disease in the field it is essential to carry out the sorting of tubers and the treatment of seed material with one of the following preparations in a quality manner: 0.5 percent suspension of fundazol with 50 percent s. p. [wetting powder], 80 percent s. p. kuprozan, or 3.8 percent suspension of polycarbocine. The outlay of active liquid equals 50-70 liters per ton.

In the southern and central zones of the republic flax fleas have appeared. When flax shoots appear, pests will begin to colonize them. Under conditions of dry and warm weather the pest will be harmful to shoots and chemical treatment, primarily zonal, will become necessary.

Cruciferae fleas will pose a threat to shoots of radishes, cabbage and other Cruciferae. The threshold number for treatment is 5-6 bugs per plant with colonization of 10 percent of crops.

At the present time, the struggle against weeds in grain crops is of considerable importance. Research has shown that there are 177-240 weeds per square meter on winter rye fields in Dubki Sovkhoz of Novogrudskiy Rayon, Kaplichy Sovkhoz of Kalinkovichskiy Rayon, Podberez'ye Kolkhoz of Volozhinskiy Rayon and Kolkhoz imeni Suvorov and Zarya Kolkhoz of Vileyskiy Rayon; the most widespread are the daisy, knapweed, pennycress, meadow grass and field sowthistle.

To destroy them it is necessary to carry out the harrowing of winter grains in places where this is still possible and to implement chemical treatment of crops where necessary. Pre-shoot formation of barley and oats is very effective when weed shoots are in the white filament phase and are concentrated beneath the surface of the soil.

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MAJOR CROP PROGRESS AND WEATHER REPORTING

WEATHER AND READINESS FOR FIELD WORK

Minsk SEL'SKAYA GAZETA in Russian 10 Apr 85 p 1

[Article by G. Ivanchuk, senior engineer-agrometeorologist of the Belorussian Hydrometeorological Center: "Weather and Crops"]

[Text] This year the change toward spring occurred on 14-18 March on a large part of the territory and on 26-27 March in the eastern part. Average daily atmospheric temperatures went above zero. On 1-2 April agricultural spring arrived in the southwestern half of the BSSR, i.e. average daily atmospheric temperatures surpassed +5 degrees. Here the upper soil layer is primarily in a well-hydrated condition. Soil temperature at a depth of 10 centimeters equalled +5 to +10 degree in the southern part of the republic and favorable conditions have developed for sowing early spring crops. To the northeast of the line represented by Verkhnedvinsk-Lepel'-Tolochin-Mogilev-Slavgorod and in some parts of Minsk Oblast the upper soil layer still had a surplus of moisture. Last year at this time this type of condition as regards the moisture content of soil did not exist.

In a number of rayons in the southern half of the republic a renewal of vegetation in winter crops and perennial grasses was noted. This occurred close to the scheduled time. Buds of fruit trees here swelled a week earlier than over the recent long-term.

The schedule for possible pasturing of livestock is of interest. On the basis of our calculations, optimal conditions for setting cattle out to pasture, with a use coefficient of 30-50 percent (grass growing to a height of 5 centimeters), will arrive in late April-early May in most of Belorussia and on 20-25 April in the southern part. Growing grass to a height of 10 centimeters, signifying the beginning of full-capacity pasturing of cattle, is planned for 25-30 April in the southern section and for the first 5 days of May on the rest of the territory.

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MAJOR CROP PROGRESS AND WEATHER REPORTING

WEATHER CONDITIONS AFFECT CROPS

Minsk SEL'SKAYA GAZETA in Russian 23 May 85 p 5

[Article: "Weather and Crops"]

[Text] Prevailing warm weather during the second 10-day period of May encouraged the growth and development of agricultural crops. At the present time the growth of the stem is in progress on most areas in rye and wheat. In some parts of Minsk Oblast and in a number of rayons in Gomel and Brest oblasts the tillering phase of winter rye began 4-8 days earlier than usual. In most parts of Belorussia rye is 40-70 centimeters tall and in some parts of Minsk and Gomel oblasts--80-95 centimeters. In the northeastern part of the BSSR winter rye is significantly shorter. As of 20 May it was 15-30 centimeters in height.

On most of the republic's territory the third leaf has been observed on spring crops. In most rayons of the southern half of Belorussia the tillering phase has begun in barley and in some places--in oats. This took place about 1-1.5 weeks later than last year, but close to the long-term average. The development of barley proceeded rapidly in southeastern Gomel Oblast. Here the phase of booting was noted 2-4 days after initial tillering.

In flax sown in late April-early May the stem is beginning to grow. Later crops are in the shoot-formation stage.

In the southern rayons of Belorussia we have noted the appearance of shoots of potatoes planted in the early part of the third 10-day period of April.

Sown cereal grasses are maturing and clover is sprouting shoots. Most plants are 20-35 centimeters tall; in some parts of the republic's south cereal grasses have grown to a height of 40-50 centimeters.

The growth and development of crops was accompanied primarily by sufficient moisture supplies. As of 18 May the plowing layer of soil contained 20-55 millimeters of productive moisture; the soil at a depth of 0.5 meters--50-130 millimeters of moisture. As a result of the shortage of precipitation during the second 10-day period of May, moisture reserves dropped to 14-15 millimeters in the plowing layer and 17-30 millimeters at a depth of 0.5

meters in the extreme southwest of Brest Oblast and in some parts of Gomel Oblast.

Fruit trees are blooming in most of the republic. In the southern region orchards have already finished blooming. Blooming is occurring on a schedule that is close to the long-term average.

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MAJOR CROP PROGRESS AND WEATHER REPORTING

BRIEFS

FUNGICIDES FOR WINTER CROPS--According to long-term data from the Belorussian NII [Scientific Research Institute] of Plant Conservation, it has been proven that the use of the fungicide fundozol (50 percent wetting powder, rate of 0.3 kilograms per hectare) against root rots, powdery mildew of winter wheat and pathological lodging (*Cercospora* leaf spot) of winter rye achieve an increase of 3-5 quintals of winter rye and up to 8.3 quintals of winter wheat per hectare. Treatment with the fungicide is carried out during the phase of early booting in winter grain crops and may be combined with TUR (4 kilograms per hectare active substance) or with kampoza (3-4 liters per hectare). Considering the existing situation involving wintering of winter wheat, it is essential to carry out mandatory treatment, on a priority basis, of winter grains sown according to industrial technology. [Text] [Minsk SEL'SKAYA GAZETA in Russian 25 Apr 85 p 3] 8228

WINTER RYE SUPPLIER--Minsk--Belorussia is once again confirming its reputation as one of the largest suppliers of rye in the country. Having begun sowing rye, enterprises will place it on over 1 million hectares, or almost the entire area earmarked for winter crops. Machine operators are striving to deal with fall sowing in the best possible time, are working double shifts and are introducing new technologies and new highly productive varieties. [Text] [Moscow TRUD in Russian 26 Aug 85 p 1] 8228

FERTILIZER FOR WINTER CROPS--Minsk--Belorussian enterprises are caring for fields of winter crops. With the help of pilots, the farmers of Gomel and Brest oblasts have completed the top-dressing of rye and wheat with nitrogen fertilizers. Taking the special features of every plot into account, the agronomic service has determined the most favorable schedules and doses for fertilizer application. Fields are cultivated with special preparations which prevent the lodging of crops. [Text] [Moscow TRUD in Russian 25 Apr 85 p 1] 8228

SEED PREPARATIONS COMPLETED--Minsk (TASS)--The specialized enterprises of Belorussia have completed the preparation of first-class seed for spring fields. Over 300,000 tons, or over half of total seed material--has already been shipped to kolkhozes and sovkhoses. Seed was brought up to its best condition on flow lines, where temperature regulation and other processes have been automated. The planned transition of seed farming to an industrial base

has accelerated the movement into the fields of promising varieties of grain crops developed locally. [Text] [Moscow TRUD in Russian 7 Feb 85 p 1] 8228

FIELD WORK BEGINS--Brest--The enterprises of Belorussia's Poles'ye have begun field work. About 450 collective technological detachments created in oblast kolkhozes and sovkhoses are performing soil moisture-retention operations and applying fertilizer. [Text] [Moscow TRUD in Russian 10 Apr 85 p 1] 8228

FERTILIZER WORK EMPHASIZED--Voronovskiy Rayon--The machine operators of Voronovskiy Rayon Sel'khozkhimiya [Agricultural Chemical Association] have accelerated the application of mineral fertilizers for spring crops and the top-dressing of winter crops and feed lands. On the eve of sowing operations an automated agrochemical complex began operating at the Bastuny railroad station; it is to store 11,000 tons of hard mineral fertilizers. With its operational start, the development of a network of complexes to procure, store and apply fertilizers has been basically completed in the Grodno area. In the storehouses of 15 bases that supply these enterprises it is possible to store 200,000 tons of loose and liquid fertilizers and liming materials. Specially-equipped shops here prepare nutritional mixtures according to recipes that have been developed by scientists. An automated system for managing the application of fertilizer has been introduced. Scientists of the Belorussian SSR NII [Scientific Research Institute] of Soil Science and Agrochemistry, together with specialists of the Grodno Oblast Station for the Chemicalization of Agriculture, have developed mathematical methods to determine the needs of every field in a crop rotation as regards mineral and organic fertilizers. This year the collectives of the oblast's agrochemical complexes are treating over 600,000 hectares using land resources; 2.5 million tons of organic fertilizer will be applied. [Text] [Minsk SEL'SKAYA GAZETA in Russian 16 Apr 85 p 1] 8228

INNOVATION ACCELERATES SOWING--(BELTA)--Machine operators of kolkhozes and sovkhoses in Voronovskiy Rayon have completely rejected the application of ammonia water into the soil via an ineffective surface method. Simply-designed combined units manufactured in cooperation with specialists of rayon sel'khoztekhnika [Agricultural Equipment Association] apply liquid fertilizer to a depth of 10-15 centimeters depending on the special characteristics of fields and of the crops being sown. The rayon's enterprises have produced over 100 machines with a working element 4-8 meters in width. T-74 tractors equipped with these operate in pairs with the plant's liquid organic fertilizer spreaders, and powerful tractors--with attached home-made, 3-ton capacities. In Radunskiy and Pravda kolkhozes, Trokel'skiy Sovkhoz, Oktyabr' Experimental Base and other enterprises, average output of such units exceeds 40 hectares per shift. This spring, with the help of these units it is planned to apply 11,000 tons of ammonia water to grains and legumes in the rayon. Attachments made by following the example of Voronovskiy skilled craftsmen are being widely used in the enterprises of Grodno, Shchuchinskiy, Lidskiy and other rayons. In Volkovysskiy Rayon, for example, some of the units apply ammonia water into the soil by means of pressure created by a compressor system on the T-150K tractor. On oblast fields there are almost 800 such machines in operation. [By Ch. Kobylanskiy, director of a Gossel'tekhnadzor [State inspectorate for the technical condition of the machine-tractor fleet] department of the agricultural administration of the

Grodno Oblast executive committee] [Text] [Minsk SEL'SKAYA GAZETA in Russian
28 Apr 85 p 1] 8228

NAVIGATION BEGINS ANEW--Zaporozh'ye--Navigation has begun on the lower Dnepr. Sections of the river that were welded together by ice until now have been eliminated with the help of ice breakers by the diesel boat Ivan Akulov on its way from Kherson to Zaporozh'ye carrying bauxite on board. This year the volume of shipments via large-tonnage vessels of the river-ocean type will increase significantly. Technical reequipping of the fleet allows river transport workers to travel on seas with confidence. The ports of the Dnepr basin will also receive more export-import shipments in thousand-ton floating containers-transport barges. [Text] [Kishinev SOVETSKAYA MOLDAVIYA in Russian 5 Apr 85 p 1] 8228

SOWING IN PROGRESS--Dnepropetrovsk, 19 [Apr]--This is already the second week of spring field work for the grain farmers of the Dnepr region. But even now it is necessary to put a halt to this work in some places due to the weather and to carry it out in fits and starts. Nevertheless, the extent and pace of work are increasing. A total of almost 1 million hectares of fallow and late-fall plowed fields have been harrowed, 250,000 hectares of late-fall plowed fields have been cultivated and about 200,000 hectares of perennial grasses and almost the same quantity of winter crops have been top-dressed. On 20,000 hectares sowing of grain mixtures for livestock feed has been completed and 100,000 hectares have been sown in early spike crops. According to the opinion of scientists and practical workers, those who carried out harrowing as rapidly as possible acted correctly considering the complex circumstances of the current spring. This will contribute to the rapid maturation of soil and will open up the front of field work sooner. [By N. Ivanchenko] [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 20 Apr 85 p 1] 8228

LATE SPRING--Spring arrived late in the Ternopol region and grain farmers are striving not to waste even a single hour, never mind a day. [Text] [Kiev PRAVDA UKRAINY in Russian 16 Apr 85 p 1] 8228

BUCKWHEAT SOWING--SUMY--The sowing of buckwheat has begun in the enterprises of Sumy Oblast. About 40,000 hectares have been allocated for this crop here. [Text] [Moscow TRUD in Russian 12 May 85 p 1] 8228

SOWING COMPLETED--Cherkassy, 18 [Apr] (TASS)--The machine operators of Cherkassy Oblast have removed the last sowing units from the fields that were allocated for peas. About 100,000 hectares have been earmarked for this valuable crop here. First-class seed of highly productive varieties--Raport, Truzhenik and Tenaks--have been placed in the soil. Many enterprises have pledged to thresh 30-35 quintals of the protein-rich grain per hectare. The workers of other oblasts in the Ukraine are carrying out the stockpiling of the future harvest in a coordinated manner. In various zones of the republic fertilizer is being put into the soil at a rapid pace and the sowing of seed is being carried out within a compressed period of time. This year Ukrainian farmers will sow peas on about 1.5 million hectares, or almost one-third more area than occupied by this crop at the beginning of the five-year plan. They plan to increase the yield of legume crops to 3.8 million tons. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 19 Apr 85 p 1] 8228

TOP-DRESSING BY AVIATION--Chernigov--In Chernigov Oblast agricultural aviation is working on the top-dressing of crops. The "winged farmers" work throughout daylight hours without idleness. They have already top-dressed extensive areas of perennial grasses and winter crops which were sown for the purpose of producing green feed. [Text] [Moscow TRUD in Russian 18 Apr 85 p 17] 8228

PREDICTION OF PESTS, DISEASE--Spring grain crop shoots may be damaged considerably by the frit fly. The pest has been seen in the southern and central zones of the republic. With a density of 25-30 flies per calculated unit, insecticides should be added to herbicides in the recommended doses in addition to the carrying out of chemical weeding. During the first 10-day period of May the emergence of the Colorado beetle from the soil was noted. Its rate of destruction during the winter period equalled 50-70 percent. However, considering its great fertility, the population of this pest is expected to be close to 1984 levels. On perennial grasses it is expected that increased damage will be incurred by seed and stem chalcids and leaf weevils. Crops of timothy grass will be infested with cereal timothy flies. Specialists of the plant protection service must strengthen observations over the development and spread of pests and disease, organize mass observation, specify the volume of protective work and achieve the timely and high-quality implementation of a complex of chemical and biological counter-measures with a consideration of available means of protection. [By Ye. Kolonitskaya, director of the republic laboratory of prognoses] [Excerpts] [Minsk SEL'SKAYA GAZETA in Russian 14 May 85 p 1] 8228

LATE SPRING DELAYS WORK--[Grodno Oblast]--This year's late spring added responsibilities to the farmers of Kolkhoz imeni Chernyakhovskiy of Korelichskiy Rayon. The front of field work was hindered by soil preparations; the soil was excessively moist for a long time and its maturation took an extended period of time. [By V. Karpuk] [Excerpt] [Minsk SEL'SKAYA GAZETA in Russian 12 May 85 p 2] 8228

FIELD WORK BEGINS--The enterprises of the Belorussian Poles'ye have begun field work. About 450 complex technological detachments, formed in the oblast's kolkhozes and sovkhoses, are performing moisture-retention operations and applying fertilizer. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 16, Apr 85 p 2] 8228

SPRING CROPS GROWING--Slonimskiy Rayon [Grodno Oblast]--After warm spring rains the fields sown in spring grains turned into an emerald carpet. The area in barley, oats and legumes in the rayon has increased significantly; moreover, the area in the most productive and promising barley varieties--Zazerskiy-85, Ida and Roland--has also been increased. Grain farmers of Progress, Rassvet, Pobeda and 1 Maya kolkhozes are now carrying out radical

top-dressing of crops with nitrogen-phosphorus fertilizers. The largest areas in spring crops were top-dressed in Oktyabr' Kolkhoz and Sosnovka Sovkhoz. [By V. Koval'chuk] [Minsk SEL'SKAYA GAZETA in Russian 23 May 85 p 1] 8228

MODEL CROP CARE--In contrast to past years, today crop care must be carried out on all agricultural crops simultaneously--soil herbicides must be applied to feed root crops and corn, spring crops must be weeded, winter crops must be treated with retardants and orchards, flax and vegetables must be treated against pests. It is a matter of honor for every grain farmer and specialist of the agronomical service of kolkhozes, state farms, raysel'khozkhimiya [Rayon Agricultural Chemical Association] and stations of plant protection to organize the daily observation of crops, to protect them from weeds, pests and diseases and to raise a large harvest. [Excerpt] [Minsk SEL'SKAYA GAZETA in Russian 23 May 85 p 1] 8228

CSO: 1824/384

TILLING AND CROPPING TECHNOLOGY

UDC 632.11

DETERMINATION OF SOWING DATES FOR WINTER WHEAT IN NORTH CAUCASUS

Krasnodar SEL'SKIYE ZORI in Russian No 11, Nov 84 pp 14-15

/Article/ by I. Svisyuk, chief of the North Caucasian Hydrometeorological Center, doctor of geographical sciences: "Weather and Sowing Dates"7

/Text/ Winter wheat occupies up to 40 percent--6 to 7 million hectares--in the structure of sown areas of the North Caucasus. In the total volume of the gross output of grain the share of this most important food crop reaches about 70 percent. The high yield and good response to fertilizers and advanced agrotechnology make it the most promising in the fight for an increase in grain production envisaged by the Food Program.

In the structure of crop rotations adopted in the region's zonal farming systems provision is made for the placement of winter wheat after clean fallow, winter crops following fallow, corn, sorghum for silage, pulse crops and a perennial grass layer in northern and eastern zones. In south-western regions clean fallow is replaced with occupied fallow. In other words, predecessors are selected so that with a correct organization of harvest work soil preparation for winter crops may be annually completed on the necessary dates.

In addition to a good predecessor, a high yield of agricultural crops, as is well known, is the derivative of a number of other no less important factors, such as first-category seeds of regionalized varieties carefully and promptly prepared for sowing and sowing carried out well and on optimum dates. All these are factors connected with a rise in the standard of farming.

Winter wheat can be an even more promising crop when agrometeorological conditions of certain regions and the characteristics of these conditions during specific years are taken into consideration in a scientifically substantiated manner. A study of this problem leads to the firm conviction that some agrotechnological methods of wheat cultivation should not remain the same year after year, but should be changed with due regard for the existing agrometeorological situation.

What agrotechnological measures should be coordinated with agrometeorological conditions?

They are primarily winter wheat sowing dates. Of course, this problem is not new and, on the whole, our grain growers correctly orient themselves in the selection of dates for the sowing of regionalized varieties. However, consideration of the agroclimatic and agrometeorological situation presents a

difficulty. The data of subdivisions of the State Committee for Hydrometeorology and Environmental Control, whose analysis can serve as a guarantee of success in the performance of spring sowing, should come to our aid here.

With satisfactory and good reserves of productive moisture in the 0 to 20 cm layer (11 to 15 mm and more) and a shallow overdrying of the upper soil layer (no more than 5 to 7 cm) prepared for winter wheat sowing it can be carried out on dates optimum for a given zone.

If several winter wheat varieties are cultivated, their sowing should be in an order of decrease in the frost resistance of a variety: more winter hardy varieties are placed first and less winter hardy ones, last. This is due to the dissimilar depth of the forced dormancy of varieties, to the different length of the stage of their vernalization and, consequently, to the need for a different length of fall vegetation.

If nonfallow and fallow predecessors are allocated for the same variety, the former are occupied at first and the latter, after that. On fallow the content of nitrate nitrogen and moisture is higher and plant development is more intensive.

Unfortunately, the sowing of winter crops on optimal dates is not always successful. This is connected with many reasons.

First, as statistical data show, on most of the region's territory in one-half of the cases the end of summer and the beginning of fall are arid and upper soil layers dry up or contain an amount of moisture that can cause the development of mold fungi and the death of seeds.

Second, some winter crops are placed after predecessors harvested later than grain crops (corn and sorghum for silage) and, therefore, during years with a delayed vegetation of silage crops or in connection with their late harvesting there is no time to prepare the soil and sowing on such fields is postponed to a later date.

Third, on different kolkhozes and sovkhoses, unfortunately, the level of organization of preparatory presowing operations is also different for now. Therefore, in the same region some farms complete it on schedule, while others do not cope with it, which leads to a delay in sowing dates. Consequently, some winter crops are sown late and begin wintering at initial stages of development (sprouts-third leaf). Such crops often are thinned out heavily and have to be resown in spring. For example, in Rostov Oblast in 1972-1982, on the average, only 4 percent of the winter crops died at the tillering stage in winter and were resown in spring and 21 percent, at the seedling and third leaf stage.

Thinness arises basically as a result of the winter killing of poorly developed plants. Some winter crops die owing to unfavorable moistening conditions in fall and the appearance of ice crust (see table).

Development of Winter Crops in Fall, Percent of Their Death and Its Main Causes

Years	Percent of fully tillered winter crops in fall	Plants died at various stages of development, %		Average percent of death of winter crops	Main cause of death
		tillering	seedling and third leaf		
1971/72	64	26	43	69	winter killing
1972/73	55	0	3	3	winter killing and fall drought
1973/74	55	1	25	26	"
1974/75	67	0	7	7	"
1975/76	50	7	43	50	winter killing, ice crust
1976/77	58	0	18	18	winter killing and fall drought
1977/78	70	1	13	14	"
1978/79	57	3	32	35	"
1979/80	64	1	16	17	"
1980/81	58	7	9	16	winter killing, carabid
1981/82	60	0	21	21	winter killing and fall drought

Thus, winter wheat sowing under unfavorable fall conditions leads to the fact that 40 percent of the plants remain underdeveloped, are heavily damaged in winter and are subject to resowing on sizable areas, which leads to big material and labor expenditures and to a shortage of grain.

In our opinion, in a number of regions sown areas of winter crops should be corrected in accordance with weather conditions. At the same time, however, it is also necessary to perform a number of presowing measures.

The experience of farms in the North Caucasus, like our long-term investigations, shows that soil should be fully prepared for sowing no later than 30 to 35 days before its beginning. This guarantees normal soil subsidence, eliminates the heaving of crops and makes it possible to retain and accumulate moisture. Furthermore, during an early preparation of fields for sowing its performance does not present difficulties and on any farm will require no more than 2 to 3 days after nonfallow predecessors.

This is how advanced farms and regions act, sowing winter crops during the optimum period almost annually. They succeed in this only because soil is prepared in advance and, as a rule, there is moisture. Furthermore, other operations are also promptly carried out on such kolkhozes and sovkhoses and this raises the general standard of farming and the yield of fields. For example, let us take rural kolkhozes imeni 22 Parts"yezda and Leninets in Rostov Oblast located side by side on the same land. On the Kolkhoz imeni 22

Parts"yezda during the last 10 years winter crops on the entire area came out from winter at the tillering stage and resown areas were minimal even during 1972, which was a harsh year for wintering. On the Leninets Kolkhoz during some years up to one-half of the wheat crops wintered at the seedling and third leaf stage and, therefore, resowing on the farm was much bigger. Owing to the untimely soil preparation and belated sowing on the Leninets Kolkhoz, especially during unfavorable years, the yield of winter wheat dropped to 18 or 23 quintals, whereas neighbors threshed no less than 32 to 36 quintals of good-quality grain per hectare. If, for example, we take several last years (1980-1983), the yield on the Kolkhoz imeni 22 Parts"yezda in any year remains higher than on the Leninets Kolkhoz. For example, in 1980, when at the end of vegetation of winter crops the weather was extremely dry, the Kolkhoz imeni 22 Parts"yezda, on the average, gathered 38.3 quintals of wheat per hectare and the Kolkhoz Leninets, only 18.4; in 1981, 42.7 and 30.1 respectively; in 1982 under the conditions of unfavorable rainy weather during harvesting, 40.4 and 27.2; in 1983, 39.5 and 32.8 quintals.

These farms are located in the southern part of Rostov Oblast or, essentially, in the central part of the North Caucasian Region, where winters are comparatively mild and the length of the optimum sowing period is 14 to 15 days. In more northern regions, where the sowing period does not exceed 8 to 10 days, the importance of an early soil preparation increases significantly and this must always be taken into consideration.

The postponement of sowing to a later time for certain reasons should be limited to maximum late dates. In the northern regions of the Don, to the northeast of the line passing through Krasnyy-Sulin-Konstantinovsk-Zimovniki-Remontnoye, maximum late dates are 20 to 25 September, which with a satisfactory soil moistening make it possible to ensure the entry of winter crops into the tillering stage before the cessation of their vegetation.

It should be noted that in the mentioned region during 3 or 4 out of 10 years, owing to a prolonged absence of rainfall, even with due regard for the postponement of sowing dates, it is impossible to place winter crops on planned areas. During such years areas under wheat should be reduced by 30 to 40 percent and during especially unfavorable falls, when rain does not fall for more than 2 months, as was the case in the fall of 1982 and 1983, up to 60 percent. To the south of the indicated border, within the boundaries of Rostov Oblast, maximum late dates are limited to the period of 26 September-10 October. When wheat is sown on later dates, even in this region it does not have time to be fully tillered by the beginning of wintering, winters in a worse manner, although it is damaged less than in northern regions (twice or three times in a decade), its yield is close to the yield of spring barley and during years with an unfavorable wintering, below it.

In this region during 2 or 3 out of 10 years, owing to a prolonged absence of rainfall, it is impossible to sow before the beginning of maximum late dates. Therefore, after maximum late dates sowing can be permitted only following good rain guaranteeing the production of good sprouts and only in places where a tense situation can be created during the period of spring sowing. In all other cases the sowing of winter crops is not advisable at such a time.

Of course, a reduction in the sowing of winter crops in no way should disrupt existing crop rotations. Winter crops should be replaced with equivalent grain predecessors. In order to retain the grain balance, it is best to place spring barley on these areas in spring.

If sowings of winter crops are not permitted in the Don after maximum late dates, during years favorable in terms of wintering the oblast's kolkhozes and sovkhoses would not suffer a loss in the gross output of grain, because the yield of spring barley and of late sowings of winter crops during such years is approximately the same. However, during years unfavorable in terms of wintering this would make it possible to eliminate the death and resowing of winter crops on big areas and to save several hundred thousand tons of grain of both seeds of wheat and of spring barley underharvested owing to the delay in sowing.

Scientifically substantiated farming systems, which in their direction are soil protective and moisture saving, are actively introduced in the Don, as in other regions of the North Caucasus. Clean fallow becomes the basic predecessor for winter wheat in Rostov Oblast, especially in eastern and north-eastern regions. During any year, with a prompt and correct cultivation the fallow field does not dry up more than 3 to 5 cm from the top and, therefore, it is always possible to sow on it on optimum dates and to attain good sprouts and the further normal development of winter crops, which guarantees high harvests.

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TILLING AND CROPPING TECHNOLOGY

INCREASING GRAIN PRODUCTION IN CENTRAL CHERNOZEM ZONE

Potential of Grain Production

Moscow SEL'SKAYA ZHIZN' in Russian 12 Feb 85 p 2

[Article by D. Vanin, director of the VNII [All-Union Scientific Research Institute of Farming and Soil Protection from Erosion and Hero of Socialist Labor, RSFSR Central Chernozem Zone: "The Potential of Chernozems: Grain Production is the Key Task"]

[Text] Complex weather conditions resulted in a significant drop in field productivity in the central chernozem zone of the RSFSR. However, it would be incorrect to attribute underproduction solely to unfavorable weather. It was not everywhere by far that farmers countered nature's caprices with a rich arsenal of agrotechnical and technological resources. This is attested to, in particular, by the great variations in productivity among oblasts, rayons and enterprises. I will cite only one example from among many. In Kolkhoz imeni Krupskaya, Dobrinskiy Rayon, Lipetsk Oblast, the first brigade produced 22.4 quintals of winter wheat and 27.1 quintals of barley per hectare; the second brigade--5.9 and 15.9 quintals respectively.

In preparing for spring, it is very important to thoroughly study the reasons for a drop in field productivity and to learn which methods, technologies, farming systems and methods of organization and wage payments enabled leading rayons, enterprises and subdivisions to bring to a minimum the negative consequences of the elements. All of the best from this experience must be included in technological maps and in the production program.

What lessons are we talking about primarily?

During dry periods the best means of accumulating moisture is clean fallow. According to data from the Fruit and Vegetable Institute imeni I. V. Michurin, on clean fallow yield equalled 42.5 quintals per hectare, on previously-occupied fallow--28, and following peas for grain--23 quintals per hectare. Nevertheless, in the zone clean fallow is obviously underestimated, especially in the enterprises of Belgorod, Voronezh and Tambov oblasts. In 1983 clean fallow made up 4.6, 5.7 and 6.6 percent of arable land in these oblasts respectively. No noticeable changes occurred last year. Moreover, in a number of places the necessary amount of fertilizer was not applied during

basic plowing; due to delays in cultivation, fallow was transformed from "black" to "green" and corn and other feed crops were sown on it.

And how was an important factor in stable farming such as efficient structure of arable land adhered to? During a spring-summer drought it is very important to cultivate crops that have less need of moisture in the spring and in early summer (corn for grain, sorghum, millet, sunflowers). In the TsChO [Central Chernozem Zone] the area in these crops is still insignificant. In many places the yields of barley and spring wheat are low.

The main barrier on the path toward increasing the area in alfalfa, sainfoin and sorghum is poorly-organized seed farming. In order to achieve accelerated development of commercial seed farming involving these crops in specialized enterprises it is important to make corrections in plans related to the sale of agricultural and livestock products in addition to developing a material base.

A reserve for increasing productivity such as the consideration of exposure to sunlight and degree of slope and the degree of soil erosion is utilized poorly. Meanwhile, when intertilled crops are cultivated on weakly-eroded soils yield decreases by 30 percent, on soils with average erosion--by 30-70 percent and on greatly eroded soils--by 70-90 percent. Similar tendencies are observed in the cultivation of perennial grasses. On sunny slopes it is more expedient to plant corn, sunflowers, millet, sugar beets and sorghum. However, even this condition is not always kept in mind when plans are being developed on the intra-enterprise organization of territory and it has not been reflected in farming systems to the necessary degree. Most frequently the development of such systems begins not with the question of what the land can give under specific conditions but with what must be taken from it.

But is the differential system of soil cultivation being used creatively everywhere?

In dry regions with unstable precipitation this system must effect the accumulation and conservation of moisture above all. Extensive practical experience over many years, especially in 1984, showed that surface cultivation of soil for winter crops, sweep cultivation for spring grains and annual grasses and regular semi-fallow cultivation reinforced with slotting for row crops correspond to the given requirements. In tests by the VNII of Farming and Soil Protection from Erosion, sweep cultivation increased grain yield by 3.3 quintals per hectare (as compared to a control yield of 31.9 quintals), and by the Fruit and Vegetable Institute imeni I. V. Michurin--by 5 quintals (control--28 quintals). In Kolkhoz imeni Frunze of Belgorodskiy Rayon winter crops undergo surface cultivation primarily and yield 38-40 quintals of grain per hectare and more. The merits of this method were evaluated in many other enterprises as well.

And yet...Despite its evident advantages, it is difficult for an innovation to make headway; in the Central Chernozem Zone as a whole surface and sweep cultivation for the 1984 harvest comprised about one-tenth of the necessary amount. Basically this can be explained by an underestimation of the aforementioned methods on the part of agricultural directors and specialists

as well of the Ministry of Tractor and Agricultural Machine Building. The former utilize existing equipment unproductively and the latter are not increasing the production of this equipment although the outlay of metal per unit area is less than for regular plow tilling. This type of paradoxical phenomenon reflects general state and branch aspects that are related to an insufficiently improved system for planning and stimulating accelerated scientific-technical progress.

As we know, farm products are produced under various soil-climatic conditions, and technologies are also not the same. For these reasons it is essential to systematically regionalize such technologies according to a scheme, as is done in evaluating varieties. Oblast experimental stations and other scientific institutions that conduct experiments should become involved in this. On the basis of a consistent generalization of materials, the USSR Ministry of Agriculture will be able to objectively determine work volume and the need for the corresponding technology to carry out this work. There is something else. Strict fulfillment of plans to introduce the achievements of science and progressive practice should be made law and should be rewarded both morally and materially.

The low level of effectiveness of fertilizers is alarming. In the kolkhozes and sovkhoses of the Central Chernozem Zone and in the country as a whole this level is considerably lower than on test plots. Data from long-term experiments at L'govskaya Experimental-Breeding Station shows that the effectiveness of fertilizer is generally lower by a factor of 2-3 throughout Kursk Oblast as compared to the control. This can be explained primarily by violations of the optimal ratio of nutritional elements and the schedules and quality of application of these elements.

There are often cases in which mineral fertilizer is delivered unevenly in the course of the year so that at the optimal application time there is a shortage of one or several types of it. Evidently it is time for industrial workers to draw the proper conclusions from this. On the other hand, enterprises must finally build storehouses to store mineral fertilizers and stop working from "wheels." Can it be considered normal that existing machines do not achieve uniform application of fertilizer and optimal dose regulation?

Return on fertilizer also decreases due to the fact that a much larger quantity of nutrients is applied to one crop in a crop rotation than is extracted with the harvest whereas another crop will receive no nutritive substances at all. The negative calcium balance also has its effect. In the enterprises of the Central Chernozem Zone over 40 percent of arable land consists of acidic soil. The accelerated removal of calcium from the plowing layer is contributed to by the large areas in sugar beets and their fertilization with large doses of physiologically acidic forms of fertilizer. Meanwhile, the Central Chernozem Zone has sufficient reserves of liming materials, but they are utilized poorly. There is a shortage of transportation to move defecated juice from sugar plants to fields; the extraction of chalk and its subsequent processing have not been organized well.

We hardly need to prove the significance of organic fertilizers. Let me cite just two examples. Zarya Kommunizma Kolkhoz of Korenevskiy Rayon, Kursk Oblast, annually applies up to 9 tons of it per hectare of arable land. In 1984 yield per hectare here was 30.2 quintals of grains, 602 of sugar beets and 386 of corn for silage. The same amount is applied by 60 Let VLKSM Sovkhoz of Tambov Oblast, and each year it produces large and stable harvests. In the Central Chernozem Zone as a whole the problem of production and application of organic fertilizer is very acute. There has been a sharp drop in humus content on fields; there is a negative humus balance. The organic fertilizers that were applied by zonal enterprises during the 11th Five-Year Plan compensate for the mineralization of humus by only 50-60 percent. As a result we have a deterioration in structure, in water-retention capability and in other soil properties.

In order to deal with this important problem each kolkhoz and sovkhoz in this zone should have a permanent production subdivision to remove manure directly from livestock facilities daily, regardless of weather conditions, and to place this manure in pit storage. Once again there is justifiable criticism against machine builders--there are not enough loading devices and manure spreaders and their quality is low. The forced use of bulldozers and cultivators to move organic fertilizer decreases the effectiveness of this agricultural method by a factor of 1.5-2.

Agricultural-forest reclamation measures have a positive effect on the stability of farming. According to data from the VNII of Farming and Soil Protection from Erosion, in the enterprises of the Central Chernozem Zone the average increase in yield of winter wheat equalled 8 percent, of barley--15 percent, of sugar beets--9, and of corn for silage--11 percent during moist years on fields protected by forest belts; during dry years corresponding growth equalled 35, 23, 21 and 24 percent. Forest belts have passed the test and will become an important factor in increasing yield this year.

In addition to this, water-regulating forest belts, strengthened by hydrotechnical structures, decrease surface currents by one-third and curtail soil erosion by a factor of 7-8. Under the influence of additional forest belts the growth of ravines is curtailed. An example? In Oboyanskiy Rayon, Kursk Oblast, due to the 27-year old additional forest belts the number of growing ravines decreased from 83 to 7 percent. Unfortunately, in recent years there has been a decrease in forestation, and especially in the development of belts to protect fields and regulate water.

The Central Chernozem Zone will be able to follow the path of stable farming only after completely solving the aforementioned problems, with a consideration of specific conditions and with the use of scientific achievements and progressive experience. This is the path that will enable the zone to produce large and stable harvests under any type of weather conditions.

Commentary on Problems in Chernozem Zone

Moscow SEL'SKAYA ZHIZN' in Russian 5 May 85 p 2

[Article under the rubric "After SEL'SKAYA ZHIZN' Came Forward": "The Potential of Chernozems"]

[Text] The editors received several responses to the article entitled "The Potential of Chernozems" published on 12 February. Each response notes that the author has touched on important questions relating to the stability of agricultural production and the expansion of soil-conservation farming in the Central Chernozem Zone and having a direct effect on continued growth in productivity. There were reports on measures being taken locally to improve the situation.

"In our oblast," writes the deputy chairman of the Voronezh Oblast executive committee, I. Vinogradov, "specific comprehensive programs have been planned for increasing soil fertility. The area in clean fallow is being increased to almost 300,000 hectares. Each rayon, kolkhoz and sovkhoz has been given the task of increasing the dose of organic fertilizer applied to the soil to 6-7 tons per hectare. It is planned to create forest belts on 27,500 hectares to protect fields and regulate water."

The response of the deputy chairman of the Kursk Oblast executive committee, V. Domnikov, singled out an important factor in stability of farming--an efficient crop structure, involving above all in increase in the area of corn cultivated according to grain technology and of alfalfa.

The authors of responses unanimously complain that the introduction of a soil-conservation technology for cultivation is being hindered in the Central Chernozem Zone as a result of the shortage of highly-productive counter-erosion equipment. This problem grows more and more acute with each passing year and it must be solved more rapidly.

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TILLING AND CROPPING TECHNOLOGY

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EFFECT OF CROP ROTATION, FALLOW ON WINTER WHEAT

Krasnodar SEL'SKIYE ZORI in Russian No 4, Apr 85 pp 20-21

[Article by V. Khomko, director of the laboratory of crop rotations of the Stavropol NII [Scientific Research Institute] of Agriculture and candidate of agricultural sciences, K. Kalashnikova and L. Khomko, senior scientific workers and candidates of agricultural sciences, and Ye. Glazkov, scientific worker: "The Harvest and Grain Quality"]

[Text] A large portion of the territory of Stavropol Kray, with the exception of a number of foothill and Kuban' regions, is located in a zone with a sharp continental climate. Almost two-thirds of land is categorized as dry steppe and about 13 percent--as semi-desert. In these zones the prevailing soil types are chestnut and light-chestnut.

Stable harvests of winter grains are possible here only if crops are sown following clean fallow. During years with a favorable climate the increase in yield from fallow fields equals 10-34 percent as compared to non-fallow predecessors, and during dry years this increase reaches 120 percent and more. Thus, in Apanasenskivskiy Rayon, which is located in an extremely dry region, the productivity of winter wheat on fallow equals 11.8-15.1 quintals per hectare whereas following regular predecessors it equals only 2.6-5.2 quintals per hectare. In Arzgirskiy, Levokumskiy and Neftekumskiy rayons located in the same zone it was not possible to produce any winter wheat grain at all on non-fallow predecessors in 1976.

Taking the high level of effectiveness of clean fallow into account, the enterprises of the extremely dry and dry zones which did not include sunflowers in the structure of their fields began the assimilation of short grain-fallow crop rotations in 1976--clean fallow-winter wheat and clean fallow--winter wheat--winter wheat. Here the sowing area in winter wheat decreased by 8.4 percent during the 10th Five-Year Plan as compared to the eighth but gross grain production increased by 23 percent. A decisive role here was played by almost doubling the area in clean fallow, which enabled farmers not only to increase the yield of winter wheat but to also stabilize it from one year to the next. Thus, average wheat productivity in 1977-1982 increased by 12 quintals per hectare in Apanasenskivskiy Rayon and by 8.6 quintals per hectare in Petrovskiy Rayon as compared to the annual average for the Ninth Five-Year Plan. On the whole, in the extremely dry and dry zones

productivity of wheat increased by 164 percent during this period and grain production increased by 153.8 percent.

However, the goals related to grain production in these regions and achieved by means of introducing and assimilating grain-fallow and grain-tilled crop crop rotations are by no means the limit. In many enterprises productivity is significantly higher. In 1982 the per-hectare yield of winter wheat on fallow fields equalled: in Rossiya and Pravda kolkhozes of Apanasenkovskiy Rayon--40.9 and 40 quintals, in Komsomol'skiy and imeni Voytika kolkhozes of Aleksandrovskiy Rayon--42 and 40.8 quintals, and in Pobeda and Pravda kolkhozes of Petrovskiy Rayon--48 and 46.6 quintals. Large grain harvests have been achieved here by means of the fact that a soil crust was not allowed to form on fallow fields and that the upper layer of soil was maintained in a cultivated condition (capillary flow of soil moisture to the soil surface and thus the unproductive loss of moisture was avoided). Mechanical cultivation of fields eliminates weeds and dries the soil in a timely manner. In our studies weed infestation on clean fallow decreased by 81-82 percent on the average over a period of 3 years. Even in the driest of years it is possible to retain an adequate moisture reserve in the soil for the sowing of winter crops.

Since 1976 up to 91 percent of winter wheat crops have been placed on clean fallow during extremely dry years, and up to 53 percent during dry years.

Whereas in the kray's dry zone clean fallow has become the main stabilizer of wheat productivity, in zones with unstable and sufficient moisture occupied fallow and legume crops are more important for the efficient use of arable land. Here with an insignificant drop in yield following this predecessor (as compared to clean fallow) up to 200 quintals of high-protein green mass is produced during the following year.

In our experiments in these zones average productivity of winter wheat over a period of 14 years equalled: on clean fallow--52.5 quintals per hectare, on occupied fallow--49.9, and following legume crops--53.6 quintals per hectare.

Not infrequently the following happens: in 1981 the yield of winter wheat was 42.9 quintals per hectare on clean fallow and 43.4 quintals per hectare on occupied fallow in the Mikhaylovskoye OPKh [Experimental Model Farm] of the Stavropol NII of Agriculture; in Kolkhoz imeni 20 Parts'nykh of Kirovskiy Rayon yield was 31 quintals per hectare on clean fallow, 34.1 on occupied fallow and 31.6 quintals per hectare with legume predecessors.

The insignificant difference in the productivity of wheat when sown after legumes, clean fallow and occupied fallow is based to a considerable degree on the moisture content of the plowing layer at the time that winter crops are sown. During the period of intensive development of crops occupying fallow (in May-June) reserves of moisture in the soil decrease significantly on occupied fallow as compared to clean fallow--these reserves are expended for the development of the harvest. However, depending upon the amount of precipitation after the harvesting of crops occupying fallow soil, moisture reserves in the soil are replenished and at the time of sowing of winter wheats they are close to reserves found in clean fallow.

Equalization in moisture supplies occurs because 3-3.5 months pass from the time of harvesting of crops occupying fallow until the sowing of winter crops; during this time we have the maximum amount of summer precipitation. Soil that is worked in a timely manner after the harvesting of fallow-occupying crops accumulates precipitation whereas clean fallow loses moisture due to unproductive evaporation, and in the case of non-fallow predecessors soil loses moisture for the purpose of developing the harvest.

After the wintering of wheat the amount of moisture in the soil for all predecessors is basically similar. At the same time, the yield of wheat differs. Yield is larger in places where the soil had a larger reserve of moisture during sowing. This allows us to assume that during many years the size of the winter wheat harvest depends directly on the moisture content of the soil's plowing layer during the sowing period. Our assumption is confirmed by mathematical calculations.

The second factor that affects the wheat harvest, as established by our experiments, is the nitrate content of the soil prior to the sowing of winter wheat.

According to data provided by M. V. Lola, the content of nitrated nitrogen (in milligrams per kilogram of soil), depending on the predecessor and fertilizers, affected the wheat harvest in the following manner (quintals per hectare):

clean fallow (33 milligrams).....	55.1
sainfoin, second year of use (35 milligrams)....	56.6
peas (23 milligrams).....	52.7
oats-peas mixture for feed (17 milligrams).....	47.4
winter wheat on fallow (17 milligrams).....	47.4
winter wheat after sainfoin (17 milligrams)....	47.0
corn for silage (13 milligrams).....	46.4
winter wheat following oats-peas mixtures (12 milligrams).....	42.1

The correlation coefficient between the yield and the content of nitrated nitrogen equals 0.68 (Ff--3.78; Ft--2.1). This correlation does not manifest itself only during years with favorable soil-moisture conditions when many nitrates form in the soil or when the development of the harvest is limited by bad weather.

Weeds also have a powerful effect on the harvest. In our tests on the average over 8 years 10 weeds per square meter decreased the yield of winter wheat by 0.65 quintals per hectare. Moreover, the negative effect of weeds is manifested more strongly during years with an insufficient amount of precipitation. In this case the harvest is 72-96 percent dependent on weeds. Consequently, the weed-free state of crops is one of the main conditions for increasing productivity. And this in turn depends on the predecessor.

In our experiments the degree to which the soil was cleared of weed seed in cultivated crop areas differed: on clean fallow--81-82 percent, on occupied

fallow--66-74 percent, on fields in peas--13-30 percent and on fields in corn--15-16 percent. In addition to this, wheat itself suppressed weeds well.

Quality of Winter Wheat Grain of Bezostaya-1 Variety in Crop Rotations
(average for 3 years)

Predecessors	Weight, gm/l	Glassi- ness	Content in Grain, % Protein Gluten, 1 gm		Strength of flour, unit a.*	Volume of bread, ml.
Clean fallow	811	75	14.5	29	290	538
Sainfoin	809	78	14.4	28	380	579
Peas	807	77	14.6	29	376	556
Oats-peas mixture for feed	798	75	14.0	28	352	543
Corn for silage	798	72	13.9	27	323	530
Winter wheat	798	77	14.0	27	322	530

*[Further expansion unknown]

The development of winter wheat plants also depends on the predecessor. The better developed the predecessor is in the field, the more successfully it suppresses weeds. On fields of wheat sown following clean and occupied fallow, second-year sainfoin and peas, weed infestation in the plowing layer of soil decreases by 33-43 percent, but when it is sown following corn for silage and on winter wheat stubble fields it decreases by only 24-26 percent. This comes about because of the fact that germinated seed and shoots die in the soil as a result of intra-variety and inter-variety competition as well as for other reasons. Only 10-17 percent of the weed seed that has germinated in the soil remains by harvest time.

The grain of winter wheat obtained on clean fallow, occupied fallow and following legume predecessors was characterized by high indicators in the categories of weight per liter, glassiness, and protein and gluten content, i.e. it met the requirements for strong wheat according to GOST standards (see table).

Consequently, the winter wheat harvest in Stavropol Kray depends to a large degree on the position of wheat in the crop rotation. It is essential to improve the structure of sowing areas in order to make sure that wheat follows the best predecessors. With this goal in mind in the zone of unstable moisture supplies the area in occupied fallow should be expanded (at the expense of feed crop rotations). In this case, winter wheat will have good predecessors without curtailing the area in feed crops. The area in peas must also be expanded. This can be done by means of a slight decrease in the area in winter crops. As a consequence, not only will there be an increase in the yield of winter wheat, but in the yield of grain from the entire crop-rotation area as well.

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EFFECT OF AMMONIA, INHIBITORS ON GRAIN CROPS

Krasnodar SEL'SKIYE ZORI in Russian No 4, Apr 85 p 23

[Article by V. Chmulev, department director of the North Kazakhstan affiliate of the Scientific-Research and Planning-Technological Institute of Liquid Fertilizers and candidate of agricultural sciences: "Effective Agricultural Method: Simultaneous Application of Ammonia and Nitrification Inhibitors to Grain Crops"]

[Text] In Stavropol Kray anhydrous ammonia is annually applied to an area of 18,000-25,000 hectares and yields a considerable increase in the size of the harvest. Its use can be even more effective in conjunction with the use of nitrification inhibitors. The fact is that at the first stage losses of active nitrogen substance are insignificant since nitrogen in the form of ammonia binds with the soil more strongly. But during the subsequent stage it nitrifies and losses increase sharply due to leaching. Moreover, in dry steppe regions nitrates move to the surface of the soil together with the rising flow of water and thus are also displaced from the area in which most of the root mass is found.

Nitrification inhibitors decrease nitrogen losses from the soil and increase the effectiveness of nitrogen fertilizers. We became convinced of this after studying the action of the inhibitors N-Serve and ATS-60 on the fields of Kochubeyev's Voskhod Sovkhoz. They were applied in 1980-1983 together with anhydrous ammonia to rice with periodic flooding and to winter wheat on dry-farming land, on Ciscaucasian detrital chernozem with a content of 7.9 milligrams per kilogram of phosphorus in the soil, 310 milligrams of exchange phosphorus and 5.7 percent humus with a pH of 7.9.

Liquid ammonia was applied to a depth of 10-12 centimeters prior to sowing using the ABA-0.5M unit equipped with the KRN-4.2 cultivator (with a distance of 35 centimeters between the working elements). Inhibitors were applied in a mixture with water by means of a sprayer and with subsequent covering up using cultivators.

Five days after the application of ammonia without inhibitors to the field of winter wheat, there was twice as much $N-NH_4$ as $N-NO_3$ in the soil. In places where nitrification inhibitors were applied ammonia content exceeded the given control by a factor of 3-7.

After five days there was a considerable increase in the amount of nitrated nitrogen in the soil of the first variant and an insignificant increase in the soil containing inhibitors.

The action of inhibitors lasted 45 days. At this point the amount of $N-NH_4$ decreased by a factor of 6-7 in the variant without the inhibitor, and the amount of $N-NO_3$ increased. In those places where ammonia and nitrification inhibitors were applied simultaneously by the end of this period there was only 20-30 percent less nitrogen in the form of ammonia in the soil. The action of inhibitors also manifested itself during the initial period of soil sampling in the spring. This was explained by the relatively low temperatures of the fall-winter period, which slowed down or completely halted microbiological processes.

During the tillering and booting phases in winter wheat the content of ammonia and nitrated nitrogen in the soil decreased, which can be explained by the intensified use of nutritive substances from the soil for the formation of the harvest.

The largest increase in yield of winter wheat grain (4 quintals per hectare) was achieved with the application per hectare of 120 kilograms of nitrogen in the form of liquid ammonia. With the application of nitrification inhibitors and liquid ammonia the increase in yield due to inhibitors was within the range of 1.2-2.1 quintals per hectare.

Rice is more responsive to nitrogen fertilizers in the form of ammonium and ammonia. Nitrated forms are less suitable because they are very dynamic, bind with the soil more poorly and are washed out rapidly during the flooding of check plots with water.

The use of liquid ammonia and nitrification inhibitors for rice had an effect on the dynamics of active forms of nitrogen. Five days after their application the content of nitrogen in the form of ammonia fluctuated according to variants, with the exclusion of the control, but basically remained at the same level. Thirty-five days after the application of ammonia, the amount of nitrogen decreased by 49-91 percent in the variant without the inhibitor. However, in the variants in which nitrification inhibitors were applied, the amount of nitrogen in the form of ammonia decreased by only 6-35 percent at this point in time.

The action of inhibitors decreases 50 days after the application of ammonia because the content of nitrogen in the form of ammonia in the soil decreases as a result of its transformation into nitrated forms in these variants. Further there is a quantitative decrease in nitrated forms of nitrogen as well.

On the average over a period of 3 years the high effectiveness of using liquid ammonia and ATS-60 and N-Serve nitrification inhibitors for rice was demonstrated. Increase in yield equalled 4-11.6 quintals per hectare.

The application of various doses of ammonia and nitrification inhibitors had a positive effect on grain quality. Thus, with N90 and N120 and an inhibitor the amount of raw gluten in winter wheat increases by 4.6-5.1 percent, and the amount of protein--by 0.4-0.8 percent. In rice, protein content increases by 0.7-1.3 percent with the application of N120 and N150 together with inhibitors.

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FORESTRY AND TIMBER

TIMBER RESOURCE USE IN KARELIAN ASSR DISCUSSED

Moscow EKONOMICHESKAYA GAZETA in Russian No 18, May 85 p 7

[Article by V. S. Stepanov, first secretary, Karelian Obkom, CPSU: "The Initiative and Responsibility of Cadre"]

[Text] It is hard to overestimate the importance of the effective use of secondary resources during the intensive operation of the economy. We are striving to see that this very important task becomes one of the basic ones in the work of party organizations, soviet and economic organs and the labor collectives in the republic. The CPSU Central Committee and USSR Council of Ministers decrees: "On Serious Shortcomings in the Use of Secondary Material Resources in the National Economy" and "On Bringing Order into the Use of Forest Resources and Improving Forestry Operations in the Karelian ASSR" are also oriented towards this.

An Economic Attitude Toward Forest Wealth

The forest complex occupies a special role in the Karelian Economy. It employs about half of the republic's industrial-production personnel and accounts for 48 percent of all its industrial output. At the same time, we cannot but be troubled by the fact that intensive timber felling in the republic during postwar years has led to a marked depletion of its forest resources. A conservationist attitude towards the forest has become a vital necessity for loggers and workers in the wood working and pulp and paper industry. Two plena and several meetings of the party obkom buro were dedicated to this.

Work is under way in the republic to rationally use low quality wood and wastes obtained during the cutting and skidding of timber. Lespromkhozes [Logging operation establishments] alone have 55 stationary and 27 mobile chippers in operation. Their total chip output is 500,000 cubic meters. These units were created by the collectives themselves. It is obviously advisable to organize their series production at machine building enterprises. This would indisputable be advantageous.

The increasing shortage of coniferous saw timber puts great importance upon the production utilization of deciduous trees. They can and must be successfully used in the production of solid wood-fiber boards and in home

building. Last year enterprises in the Karellesprom [Karelian Forestry Industry] Association cut down more than 90,000 cubic meters of birch. The greatest successes were had by the collective at the Sortavala Furniture and Ski Combine, which only uses deciduous trees as raw material. The scraps from ski production are used to make hockey sticks, furniture parts and other mass consumption goods.

The utilization of bark is still a stumbling block. Its resources are large, about 240,000 cubic meters for the Karellesprom Association alone. Bark continues to be a waste product rather than an income earning one. It costs about 2.5 to 3 rubles per cubic meter to haul it to waste piles. Science has shown and practical experience has affirmed that bark can be used to make briquettes to be burned in steam power plants, organic fertilizers for agriculture and tannin extract for the hide processing industry.

We have still only made the first steps here: We have installed LO-45 lines developed by the KARNIILP [Karelian Scientific Research Institute for the Forest Products Industry] at the Il'inskiy and Porosezero Lespromkhozes, we have drafted a design for an AO-16 Line capable of processing 15,000 cubic meters of bark, facilities for producing fuel briquettes from bark and saw dust are being adjusted at the Kondopoga DOZ [Woodworking plant].

Work on the use of secondary resources in the pulp and paper industry is being activated. Thus, the collective at the Suoyarvi Cardboard Factory produced goods made entirely from waste paper throughout the five-year plan. This enterprise produced 303,000 tons of cardboard, using 368,000 tons of waste paper, saving 1,470,000 cubic meters of wood and earning a 25.5 million ruble profit.

However, all this was only the beginning of the program to economize on forest resources. We have reserves for savings, and they are considerable ones. At present about seven percent of wood available in cut and limbed logs [stvolovaya drevisina] is lost. It is also lost during wood working and at enterprises in the pulp and paper industry. Total losses sometimes reach 25 - 30 percent of fellings, about 3 million cubic meters annually. We consider it our duty to more rapidly put these reserves to use.

Reserves in the Mining Industry

The mining industry complex has an equally important role in the use of secondary resources. The republic has considerable potentials to increase the output of low cost gravel from wastes. For example, the Kostomuksha GOK [Mining enrichment combine] the construction of which was completely finished last year, will annually haul 60 million tons of stripped overburden rock to tailings piles. The Karelian Affiliate of the USSR Academy of Sciences and other scientific and geological organizations have shown, that such overburden rock, so called halleflinta, is a valuable raw material not only for high strength gravel, but also for products of the china-earthenware, electrical insulation, glass and other branches of industry. It has shown that it would be highly efficient to build a gravel crushing and sorting plant based on the Kostomuksha GOK. The output of gravel as a byproduct would save up to five rubles per cubic meter, compared to gravel production at other specialized

enterprises in the republic.

Why isn't such an economical plan being realized? The matter lies in the gravel hauling problem. It is necessary to build a comparatively short section of the Ledmozero - Kochkoma Railroad branch line -- only 128 kilometers long. This branch line would also substantially improve the republic's transportation system. In our view it is advisable to make provisions for this construction in the 12th Five-Year Plan.

This year will see the completion of a detailed exploration of the Zazhoginskoye schungite deposit, needed by enterprises in the USSR Construction Materials and Ferrous Metallurgy industries. Here also, the overburden rock is a valuable resource. It can be used to obtain more than a million cubic meters of gravel and construction sand, while the limestone in the quarry can be used for lime powder. The stripped rock at the Kostomuksha and Zazhoginskoye deposits alone could produce more than 5 million cubic meters of low cost gravel.

Such are the prospects, but just what is being done now to utilize wastes and byproducts at enterprises in the mining industry complex?

Unfortunately, one can name only a limited circle of enterprises where the collectives are seriously involved in such problems. Thus, for a number of years now the Kondopoga Rock Plant imeni 50 Years of the USSR has been producing decorative glued panels from small pieces of rock obtained during the cutting of facing items. Last year alone it produced more than 22,000 square meters and produced 2,000 tons of decorative material from marble wastes.

This is a positive example. In general, however, mining industry complex enterprises are not diligently searching for additional resources and are continuing to "store" in tailings piles wastes and other byproduct materials which could become valuable raw materials for the national economy. They are only slightly engaged in the use of wastes at the Karelslyuda [Karelian Slate] Combine (director, A. I. Moiseyenko). Here one could annually obtain 8,000 to 10,000 tons of decorative gravel for buildings.

Also, insufficient use is made of wastes obtained during the extraction of granite blocks at enterprises of the Karelian Construction Materials Industry Association (Director, P. N. Chistyakov).

Increase the Requirements

Work on improving the procurement of secondary resources requires constant attention.

The following have not fulfilled their plans for the procurement of secondary resources: for textile materials, worn out tires, waste paper and broken glass: the Karelian Production-Procurement Enterprise of the Lenvtorsyr'ye Leningrad Secondary Resources] Trust (former director, F. A. Bogoyev), for ferrous scrap metal -- the Karellesprom Association (director I. N. Sankin),

Karelleseksport (director, N. S. Pershin), Karelavtotrans (director, A. G. Voyevodin), and the White Sea - Onega Shipping Company (director, Ye. O. Vasil'yev).

We think that the main reason secondary resources of ferrous and nonferrous metals are far from completely used is the very weak technical base of enterprises in Vtorchermet [Secondary Ferrous Metals] and shops in Vtortsvetmet [Secondary Nonferrous Metals]. A considerable part of the equipment is obsolete and obsolescent and much work is done manually. The time has come to set up a central warehouse for receiving nonferrous metal scrap and to supply loading equipment and presses to enterprises for the collection of secondary resources.

The same can be said of the production base for the Karelian enterprise, Vtorsyr'ye. The Lenvtorsyr'ye Trust is giving practically no attention to its enterprise. Trust specialists rarely come to Karelia and do not work with procurement cadre.

A sizable economic effect can be attained through the use of secondary energy resources. Here is just one example. The Petrozavodsk Construction Materials Plant (former director, L. I. Lozin) is not using the waste heat from kilns or the heat emitted during the cooling of baked schungisite. There are plans for economically using this heat. It could completely meet the plant's needs for thermal energy. What is the problem? It is above all the mental inertia of enterprise specialists and the insufficient demands made upon them by the plant party organization.

At the CPSU Central Committee meeting with managers of industrial associations and enterprises, kolkhozes, sovkhozes, production brigades, specialists and scientists, it was stressed that it is necessary to restructure work, to obtain more final product from each unit of raw material and capacity and to decisively reduce labor outlays. This is essentially production intensification.

There are still quite a few unsolved problems in the use of secondary resources. Even though there is a sufficient raw material base, the production of chip boards has not been organized. Such boards are hauled in from Arkhangel Oblast. It is also important to increase the collections of waste paper, secondary textiles, petroleum products and glass and to set up an enterprise for their processing. Of course, solutions to these problems depend to a great extent upon the USSR Ministry of the Timber, Pulp and Paper and Wood Processing Industry, the Ministry of Light Industry, and the USSR State Committee for the Supply of Petroleum Products.

The republic party organization is now taking diverse measures to improve the collection and use of secondary raw materials and to increase the responsibility of economic agents. These important problems have already been brought up at bureaus and plena of oblast, city and rayon party committees. For example, not long ago, the obkom bureau, after examining the work of the Kondopoga Raykom concerning economies in material resources and their secondary processing, reprimanded managers for a number of serious shortcomings.

The Kondopoga Raykom took the criticism properly. It has now considerably increased the demands made upon enterprise and organization managers to put the situation in order. In 1984 alone, material resources with a total value of almost were saved in the rayon.

We are striving to strengthen party leadership primarily through educating managers in a feeling of responsibility and collectives in making high demands upon themselves. Sometimes we have to take extreme measures. F. A. Bogoyev, director of the Kapelian Production Procurement Enterprise of the Lenvtorsyr'ye Trust, and L. I. Lozin, director of a construction materials plant, were removed from their posts because of their low standards of leadership and failure to fulfill targets for the collection of secondary raw materials.

The results of the April (1985) CPSU Central Committee Plenum and the expanding preparations for the 27th CPSU Congress are directing us to center all our work on intensifying the economy and accelerating scientific and technical progress. We place much of our hopes upon the Council for the Comprehensive Development of the National Economy, which was recently set up at the obkom. Based upon public support, with its help we expect to more purposefully manage the rational use of secondary resources and to strengthen their economical use.

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WATER RESOURCES AND LAND MANAGEMENT

RSFSR MINISTER DISCUSSES FURTHER LAND RECLAMATION EFFORTS

Moscow EKONOMIKA SEL'SKOGO KHOZYAYSTVA in Russian No 4, pp 31-36

/Article by V. Loginov, RSFSR Minister of Land Reclamation and Water Management: "Land Reclamation -- The Basis for Stable Agricultural Production; for more on V. Loginov, see also UAG-85-007, dated 22 Mar 85/

/Text/ The October (1984) Plenum of the CPSU Central Committee was an event of great political significance in the life of the country. In solving the task concerned with a stable intensification of the food fund, the party has assigned a chief role to land reclamation -- a powerful means for intensification and for raising the productivity of farming. The long-term program for land reclamation up to the year 2000, approved by the Plenum, constitutes a new and large-scale stage in the campaign to raise the fertility of land. The task has been assigned of expanding the area of irrigated and drained lands by a factor of 1.5 within a relatively short period of time and in the Russian Federation -- a twofold expansion. This will make it possible to double the yield of field crop husbandry products being obtained from such land.

At the present time, two thirds of the agricultural land areas in the Russian Federation are located in arid regions and one fourth of the feed land areas requires soil improvement work and drainage. A considerable portion of the land requires applications of lime and gypsum. Large tracts of arable land, especially in the central-chernozem regions, are subject to wind and water erosion. A true calamity in many regions -- periodic droughts which occur every 2-3 years and which bring about sharp fluctuations in the production of agricultural products. In this regard, it is difficult to exaggerate the timely nature of measures undertaken by the party and government aimed at radically improving the agricultural lands and creating a guaranteed food fund based upon the further development of land reclamation operations.

Following the May (1966) Plenum of the CPSU Central Committee, a considerable amount of land reclamation construction work was carried out in the RSFSR. As a result, the overall area of reclaimed lands, taking into account the increase planned for 1985, will amount to approximately 12 million hectares. This is almost one third of the country's reclaimed land fund. On the whole, during the years which have elapsed since the May (1966) Plenum of the CPSU Central Committee, approximately 40 billion rubles worth of capital investments have been used for land reclamation and for the agricultural improvement of such land. The overall annual volume of capital investments for the RSFSR during

the 11th Five-Year Plan is 3.5 billion rubles, more than 40 percent of all investments for these purposes throughout the country.

Over the past 3-4 five-year plans, large-scale aquicultural installations have been placed in operation throughout the republic: Krasnodar and Chogray reservoirs, the Great Stavropol and Don mainline canals in the north Caucasus, Kulunda Canal in western Siberia, Kuybyshev and Saratov canals in the Volga region and others.

During this period, powerful irrigation systems were built in the Volga region -- Spasskaya, Engelsskaya, imeni Gagarin, Kislovskaya, Bol'shaya Volgogradskaya and Kalmytsko-Astrakhanskaya in the north Caucasus; Pravo-Yegorlykская, Maryano-Cheburegulsкая, Donskaya, Bogayevsko-Sadkovskaya and Aleyskaya in the Altay Kray and many others. Land reclamation work is being carried out along a broad front in the nonchernozem zone, western Siberia, the central-chernozem zone and in other regions.

Irrigated farming in the Russian Federation has become one of the principal water consumers, the requirements of which amount roughly to 35-40 billion cubic meters of water. The logistical base required for carrying out land reclamation and aquicultural work has been created. Here one finds plants for the production of reinforced concrete products (total capability of 5.5 million cubic meters), steel and other types of pipe, enterprises for the production of complete unit pumping stations, shut-off and regulating accessories and for the repair of land reclamation equipment and plants for the production of items used in large-panel housing construction having an overall capability of 1.1 million cubic meters.

During the 1976-1982 period, more than 800 million rubles were expended by RSFSR Minvodkhoz /Ministry of Land Reclamation and Water Management/ alone for the development of a production base. An extensive network of scientific-research and planning organizations was created. More than 900 repair-operational organizations with an annual work volume in excess of 300 million rubles presently provide services for and maintain the principal land reclamation funds, valued at more than 12 billion rubles. A service for protecting and exercising control over the utilization of water resources has been organized within the RSFSR Minvodkhoz.

Thus a branch possessing great production-technical potential was formed in the republic during these years.

During the 1966-1984 period, a considerable increase took place in the technical level and equipping of irrigation and drainage systems and installations. At the present time, the length of just a closed irrigation network alone is more than 100,000 kilometers, there are more than 1,700,000 hydraulic engineering installations and 6,500 fixed pumping stations with an overall installed capability of more than 3.6 million kilowatts, 2,000 kilometers of canals, 247 pumping stations and five large hydraulic terminals equipped with automatic equipment.

The technical level of systems under construction is constantly being raised through the introduction into land reclamation construction of the latest scientific and engineering achievements and new types of industrial products.

Sprinkling equipment is being employed extensively for irrigation purposes. There are more than 80,000 units of such equipment and the level of watering by means of sprinkling has reached 70 percent. Considerable progress was achieved over the past decade through the introduction of the highly productive Fregat, Volzhanka, Dnepr and Kuban' sprinkling machines, which have mainly closed irrigation networks and thus make it possible to raise labor productivity during irrigation work by several times compared to the traditional equipment.

During the period which has elapsed since the May (1966) Plenum of the CPSU Central Committee, a considerable increase has taken place in the role played by reclaimed land in connection with the overall volume of field crop husbandry products being produced in the RSFSR. Occupying only 5 percent of the republic's agricultural land, the irrigated and drained tracts presently furnish 15 percent of the gross farming output. During the Ninth Five-Year Plan, the entire increase in field crop husbandry output was obtained from reclaimed lands, during the 10th Five-Year Plan -- on 83 percent and during 4 years of the current five-year plan -- on 100 percent of these lands.

A number of oblasts and krays already have large areas of reclaimed land. For example, in Saratov Oblast 500,000 hectares are under irrigation, Rostov Oblast -- 445,000, Krasnodar Kray -- 470,000 and in Stavropol Kray -- 355,000 hectares. There are 366,000 hectares of reclaimed land in Leningrad Oblast, including 330,000 hectares of drained land and in Moscow Oblast -- 350,000 hectares, of which amount 210,000 are drained. This has made it possible to create the conditions required for stabilizing the production of agricultural products.

High results in the use of reclaimed lands have been achieved by many farms, rayons and even oblasts on the whole. For example, more than 40 quintals of grain per hectare are being obtained under irrigation conditions in Krasnodar Kray, while in Moscow and Leningrad oblasts 300-400 quintals of vegetables per hectare are being obtained under irrigation conditions and 3,000 feed units are being obtained per hectare from drained lands. More than 70 quintals of perennial grass hay are being procured per hectare from improved lands in the Kalmyk ASSR.

The potential of land reclamation work is especially obvious when we examine leading kolkhozes and sovkhozes. As a result of a high culture of farming, they obtain yields from irrigated lands which surpass to a considerable degree the planned yields. The Kolkhoz imeni Kirov in Slavgorodskiy Rayon in the Altay Kray obtained 104 quintals of perennial grass hay and 456 quintals of corn fodder per hectare under irrigation conditions. At the Krasnyy Oktyabr' Sovkhoz in Leningrad Oblast, the vegetable yield from drained lands reached 442 quintals per hectare and that for perennial grass hay -- 75 quintals per hectare.

Many experts at obtaining high yields emerged during the course of carrying out the land reclamation program. The mechanized team of Hero of Socialist Labor and communist R.F. Gorozhayeva at the Zolotarevskiy Grain Sovkhoz in Semikarakorskiy Rayon of Rostov Oblast annually obtains 90-100 quintals of corn grain per hectare under irrigation conditions. The team of V.P. Makarov at the Put' K Kommunistu Kolkhoz in Stepnovskiy Rayon in Stavropol Kray is

obtaining more than 800-900 quintals of perennial grass fodder and 600 quintals of corn fodder per hectare. In all, as a result of repeated and post-harvest sowings, the team obtains a stable yield of 14,000-15,000 feed units per hectare. The chairman of this kolkhoz, N.D. Tereshchenko, who spoke during the October (1984) Plenum, convincingly related how land reclamation, despite the fruitless and arid conditions found in the Nogay Steppe region, literally transformed the farm and added a new impulse to its socio-economic development.

Compared to natural lands, the effectiveness of utilization of drained lands is high. The average increases in agricultural crop yields in the nonchernozem zone as a result of drainage are as follows: grain crops -- to 10 quintals per hectare, potatoes -- to 60, vegetables -- 120, silage crops -- to 90, annual and perennial grasses for green feed -- 90 and annual grasses for hay -- 18 quintals per hectare.

For the republic as a whole, the average annual gross output of field crop husbandry per hectare of irrigated land is 450 rubles and drained land -- 175 rubles and for non-reclaimed lands it is only 108 rubles. During the 1981-1983 period, reclaimed lands furnished 4.3 times more output than did non-reclaimed lands and drained lands -- 60 percent more output.

For the purpose of creating a reclaimed land fund which will guarantee the stable production of agricultural products, the proportion of such land must be not less than 15-20 percent of the overall area of agricultural land.

Land reclamation, the watering of pastures and the construction of rural water lines, roads and new settlements, in addition to solving important tasks concerned with increasing agricultural output, also improve living conditions in the rural areas and provide aid in solving a most important social problem -- retention of personnel.

A noticeable reduction has taken place in recent years in the number of rural people leaving to take up residence in cities from Smolensk, Perm, Vologda and other oblasts of the nonchernozem zone, the eastern rayons of Stavropol Kray, the Kalmyk ASSR and other regions in which intensive aquicultural construction has taken place. In Saratov Oblast, in zones of developed irrigation, the number of machine operators has increased by 5,000 over the past few years.

The program for the development of land reclamation is many-sided and encompasses a great variety of problems. During the first stage in its implementation, special importance is attached to making a correct selection of the chief investment trends to be followed for the large sums allocated for this purpose.

The republic's reclaimed lands are still not being operated at maximum capability. The campaign to obtain high yields is still not viewed as being the chief task of the agricultural and aquicultural organizations, kolkhozes or sovkhoses. Two thirds of the farms have not achieved their planned agricultural crop yields from reclaimed lands. Over a period of many years, the productivity of improved lands has not been raised in almost one out of every two oblasts in the republic. For example, one fifth of the farms in the nonchernozem zone

in the use of irrigated and drained lands and it will raise the return from such lands considerably.

At the present time, the land reclamation system appears as a single entity that is artificially divided up into inter-farm and intra-farm sections. The first of these is serviced by state services for land reclamation and water management and the second by kolkhozes and sovkhozes, many of which are unable to carry out repair-operational work owing to the absence of skilled personnel, a repair base and materials and this certainly adversely affects the technical status of the systems.

The decision handed down during the October (1984) Plenum concerning the turning over, during the 12th Five-Year Plan, of the intra-farm network of irrigation and drainage systems of kolkhozes and sovkhozes to the balance of aquicultural organizations must promote an improvement in the efficiency of its operations. For the RSFSR as a whole, the plans call for land reclamation funds valued at 9.5 billion rubles to be taken over from the kolkhozes and sovkhozes. This is considered to be a plus with regard to the existing and considerable funds of the inter-farm network.

The aquicultural organizations have been given additional and considerable responsibility in connection with the use of the reclaimed land fund. It is important to note that in the process the state bears 30 percent of all expenses associated with the maintenance of land reclamation systems. The remaining large portion of the expenses will be borne by the farms themselves. In the interest of ensuring continuous financing of the operations and the correct distribution of funds, it is considered advisable to centralize the investments for these purposes from farms in RAPO /rayon agroindustrial association/ accounts or to provide the farms with special credit regardless of the financial status of the kolkhozes and sovkhozes. This measure will create the conditions required for strengthening the kolkhoz and sovkhoz economies and their logistical base, it will improve the preservation of land reclamation systems and it will also make it possible to carry out a unified technical policy in the use of irrigated and drained lands.

A considerable amount of work must be carried out in connection with the further development of repair-construction and operational organizations and their production base and the creation of new normative documents concerned with ensuring that this service is supplied with logistical resources, especially for regions of the nonchernozem zone, Siberia and the Far East.

A change must be implemented in the approach being employed for planning priorities in the erection of land reclamation construction projects, and the true potential of the farms with regard to the efficient utilization of these lands must be taken into account. According to data supplied by scientific organizations, each newly introduced 1,000 hectares of irrigated land requires an increase of up to 50 workers on a farm. Thus, when planning new land reclamation systems, every attempt must be made to ensure that the required amounts of equipment and fixed capital are available. A lag in carrying out this work continues to persist. During the 1966-1983 period, a negligible portion of the capital investments allocated for the development of land reclamation was employed for the construction of housing and production and cultural-domestic installations.

Under the new conditions, capital investments which are allocated to agricultural organs for construction in rural areas should ideally be used on farms having reclaimed lands or in those areas where the plans call for such land to be placed in operation. These problems can be coordinated at the oblast, kray, autonomous republic or RAPO levels.

One substantial reserve for raising the effectiveness of use of reclaimed lands is the modernization of irrigation and drainage systems. One third of the irrigated and one fifth of the drained land in the republic require major repairs in order to improve them. A large portion of the land reclamation systems requires technical reequipping. It is for these reasons that one half of the water delivered to canals is lost through filtration. Thus a requirement exists for employing funds for bringing about quality improvements in existing reclaimed lands, such that this work will be carried out completely during the 12th Five-Year Plan.

An important problem is that of replacing metal and asbestos-cement pipe that has outlived its service life. According to preliminary estimates, more than 8,000 kilometers of metal pipe are required today for this purpose. The planning organs must solve this important problem. The aquicultural organizations are already carrying out a number of measures aimed at protecting pipe against corrosion and making it more reliable in operation. Towards this end, the ministry plans to create production capabilities for the production of 40,000 tons of polyethylene pipe annually.

Economies in the use of water and power resources, a reduction in the number of operational personnel and the creation of an optimum regime for controlling the land reclamation systems require more work in the automation of these operations. As yet, only a negligible number of installations and systems have been automated. An increase in the level of automation over the next few years will make it possible to release thousands of workers engaged in their operation. As a rule, this includes machine operator specialists and irrigation workers, for whom work can be found at the kolkhozes and sovkhozes.

Important factors for improving the efficiency of land reclamation, raising labor productivity and achieving efficient utilization of water and land resources are an acceleration in scientific-technical progress throughout the branch and the introduction of leading experience into operations.

The long-term program calls for a further increase in the production and delivery of more powerful and modern land reclamation equipment and machines for aquicultural construction, the operation of irrigation and drainage systems and the carrying out of soil improvement work; an increase in the level of industrialization for the construction of installations and pumping stations, through the use of unified elements and structures, completely prefabricated, complete unit and floating pumping stations. All of this requires a reorganization of the work of branch scientific-research organizations.

The programmed cultivation of crops constitutes a considerable reserve for the guaranteed production of agricultural products. The plans call for this measure to be introduced into operations on an area of more than 2.3 million

hectares during the 12th Five-Year Plan. The programming of a crop is based upon the extensive introduction of the zonal system of farming and the industrial technology and upon complete support for the plants in terms of the required growth components. The use of this progressive technology in Slavgorodskiy Rayon in the Altay Kray, for example, served to raise the perennial grass hay yield from 67 to 104 quintals per hectare or by a factor of 1.5. Under such conditions, the effectiveness of the resources invested in land reclamation is raised sharply and the cultivation of agricultural crops is converted over to an industrial basis.

An improvement in the operational efficiency of the repair and operations service requires an improvement in its logistical support. At the present time, the resource requirements for repair and operational needs are being satisfied by only 30-50 percent. Thus a portion of the requirements is being covered by means of construction.

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In the Russian Federation, the plans call for the irrigated land areas to be increased to 10-11 million hectares by the year 2000 and drained land -- to 8-8.5 million hectares. A considerable increase will take place in the work volumes aimed at bringing about quality improvements in existing reclaimed lands and soil improvement work will be carried out over a large area.

Land reclamation will make it possible to solve successfully special purpose programs concerned with increasing the production of many farming products. Thus the plans call for zones for the commodity production of corn grain to be created on irrigated lands in the north Caucasus and lower Volga regions. The organization of specialized farms for the production of early and heat-loving vegetables and melon crops is continuing in Astrakhan and Volgograd oblasts.

One key task for the immediate future is that of achieving a sharp increase in feed production on reclaimed lands. The livestock husbandry requirements for coarse and succulent feeds can be satisfied completely by expanding the sowings of perennial grasses and soybeans on irrigated lands.

The plans call for large state capital investments to be used for carrying out the planned land reclamation program.

Land irrigation will be carried out to the greatest extent in the southern regions of the republic -- the north Caucasus and the central and lower Volga regions -- regions which possess the necessary conditions and labor resources and where the production of corn grain, rice, soybeans, vegetables, fruit and feed can be increased considerably. Land irrigation work will be carried out at accelerated rates in the zone of the Volga-Don, Rostov-Krasnodar and Volga-Chogray canals and also in the Zavolzhye Steppe region.

The plans call for an expansion in the irrigated land area through the use of local drainage. At the present time, approximately 1.8 million hectares are being irrigated by means of ponds and other small water areas and yet the possibility exists of doubling this area. This is an inexpensive type of irrigation and one which can be employed by the kolkhozes and sovkhozes.

During the 12th Five-Year Plan, an increase will take place in the irrigation areas based upon use of the run-off from large livestock complexes. This will produce a considerable savings in the use of mineral and organic fertilizer and it will also improve the sanitary status of the environment, especially open sources of water.

The experience available in the republic in the operation of 300,000 hectares of land using catchwork irrigation convincingly underscores its high effectiveness. With small capital investments, this type of land reclamation will ensure a considerable increase in feed production in the southern steppe regions of Siberia. By 1990, the areas of irrigated tracts based upon the use of catchwork irrigation will have doubled.

A large volume of work remains to be carried out in the zone of surplus moisture. Here the plans call for a conversion over from the drainage of separate tracts to all-round land reclamation and agrotechnical improvements on large tracts, with drainage, soil improvement, taming and developmental work to be carried out on these lands. For example, in the nonchernozem zone of the RSFSR land drainage work will be developed to the greatest degree and work will continue on the rebuilding of obsolete land reclamation systems and the carrying out of soil improvement work. A considerable increase will also take place in the areas of drained land in the Far East (Maritime Kray, Preamurye region) and in western Siberia (basins of the Ob and Irtysh rivers and the Barabinsk Depression).

The successful implementation of the planned program for developing land reclamation requires the carrying out of large-scale measures associated with the territorial redistribution of water resources. One such measure, approved during the October (1984) Plenum of the CPSU Central Committee, is that of diverting a portion of the flow of northern rivers into the basins of the Volga River and the Caspian and Azov seas. The first stage calls for the diversion of 5.8 cubic kilometers of water annually from the northern rivers into the Volga Basin. The construction of the Volga-Don Canal has commenced and work will commence during the next few years on the construction of the Rostov-Krasnodar and Volga-Chogray canals, for delivering water from the Volga to the basins of the Don, Kuban and Terek rivers. This will make it possible to create new and large irrigation tracts in the lower Volga region and in the north Caucasus. The construction of an irrigation network and a system with a hydraulic engineering terminal and a reservoir on the Irtysh River in Omsk Oblast will be completed.

The creation of such large aquicultural projects requires the use of a basically new approach by all of the collectives of land reclamation specialists in the organization of capital construction. Extensive use will be made in this regard of the experience accumulated earlier throughout the country in the erection of such installations. The plans also call for measures aimed at creating and strengthening the branch's production base and also for training skilled personnel.

Simultaneously with the implementation of the long-term program for land reclamation, special attention will also be given in the future to realizing economies in the use of water. In industry and heat and power engineering, this calls for the introduction of return water supply systems and the use of a

non-water technology and in the municipal economy -- the installation of more improved equipment and increased control over the consumption of water.

A large reserve for economizing in the use of water resources -- modernization of irrigation systems, improvements in water distribution, the introduction of land reclamation systems with mechanized watering, automated water distribution and water metering and technologies and equipment for all-round regulation of the water and salt regime for soils. In addition to producing savings in water, this will also protect the ground from salinization, leaching and drenching.

In the materials of the October (1984) Plenum of the CPSU Central Committee, emphasis was placed upon the fact that the further development of land reclamation must be carried out on a scientifically sound basis with the need for protecting the environment being taken into account. In this regard, the water protective organs must intensify their control over the thrifty consumption of water and over the discharging of impure water into rivers. Special concern must be displayed for the small rivers of Russia, which constitute the overall runoff from the basins of large rivers and which simultaneously serve as the water supply sources for cities and villages and for the irrigation of agricultural lands.

The carrying out of large scale land reclamation construction tasks pushes into the foreground the need for improving its organization in the true sense of the word. Analysis has shown that unused reserves are still to be found here. In many autonomous republics, krays and oblasts, logistical means and other resources are still being used for the erection of projects of secondary importance, and at times even unplanned projects, to the detriment of construction projects of national economic importance. The losses in working time and unproductive expenditures are high, resources are not always utilized in a thrifty manner, the volume of unfinished construction is decreasing only slowly, mistakes are being tolerated in the planning for projects and the quality of the construction work is not always in keeping with the modern requirements.

The RSFSR Minvodkhoz /Ministry of Land Reclamation and Water Management/ is undertaking measures aimed at correcting these shortcomings and strengthening state discipline, in the interest of ensuring that the large capital investments being allocated for land reclamation will be used in a purposeful and effective manner.

The land reclamation program has added new meaning to the work being performed by many economic organs and numerous enterprises and organizations of the branch. New initiatives and labor endeavors are developing in all areas throughout the republic in connection with the campaign aimed at raising the efficiency of use of irrigated and drained lands and their above-plan placement in operation. Such work is being carried out in Ulyanovsk, Penza and Kemerovo oblasts, in the Tatar and Buryat ASSR's, in Kradnodar Kray and in other regions.

Many industrial enterprises are utilizing their capabilities for the purpose of furnishing effective assistance to the aquicultural organizations. In

Volgograd and Ulyanovsk oblasts, the Altay Kray and the Tatar ASSR, acting upon their own initiative, they will produce the Fregat and Volzhanka sprinkling machines as well as other equipment.

The grandiose plans outlined by the party for the further development of land reclamation operations have been accepted by all of the republic's aquicultural collectives as an urgent task aimed at supplying the population with food products and, on this basis, improving the well-being of the Soviet people.

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WATER RESOURCES AND LAND MANAGEMENT

IMPORTANCE TO AGRICULTURE OF LAND RECLAMATION PROGRAM

Moscow AGITATOR in Russian No 8, Apr 85 pp 24-26

/Interview with RSFSR Minister of Land Reclamation and Water Management V.P. Loginov by A. Kuchushev; date and place not specified; for more on V.P. Loginov, see also UAG-85-007, dated 22 Mar 85/

/Text/ The land reclamation specialists belong to a difficult and noble profession. They return to the earth its productive strength. One can appreciate the importance of this work through the realization that on the same farm no two fields are alike. On each occasion a unique method must be employed for raising the fertility of the soil. It is by no means an accident that land reclamation is considered to be a decisive condition for the intensification of agricultural production. It will not tolerate routine or stereotyped actions and it requires extensive knowledge and the use of a creative approach.

Based upon the decisions handed down during the October (1984) Plenum of the CPSU Central Committee and taking into account scientific data and the zonal systems of farming, a long-term program for land reclamation work up to the year 2000 has been developed and placed in operation in the Russian Federation. It defines the prospects for developing the branch and also the methods and technologies considered to be efficient for individual zones. Measures have been outlined for introducing the achievements of scientific-technical progress into planning, construction and the operation of installations, personnel training and environmental protection. The creation of new and large regions for the guaranteed production of field crop husbandry products in the Volga region, western Siberia, the north Caucasus and southern Urals is unfolding at an accelerated rate.

Practical experience underscores the wholesome effect that land reclamation work is having on growth in the kolkhoz and sovkhoz economies. Many farms in Saratov Oblast have for years been troubled by fodder shortages. Yet with the arrival of water the people have acquired confidence, they have a better grasp of the future and they are now living and working better. Today, with the irrigated fields amounting to 500,000 hectares, the oblast is steadily carrying out its task with regard to the sale of livestock husbandry products and satisfying the population's requirements for vegetables. Stable yields are being obtained in Stavropol Kray. For example, as a result of irrigation the Put' K Kommunizmu Kolkhoz is obtaining 128 quintals of feed units per hectare instead of five as was formerly the case.

This year, improved tracts of land are furnishing 15 percent of all farming output. Nevertheless the irrigated and drained lands in the Russian Federation still occupy only 5 percent of the areas under crops, compared to an average indicator for the country of 11 percent. This is why the principal efforts of the republic's aquicultural organizations are concentrated on expanding irrigation, which during the 12th Five-Year Plan must encompass almost 14 million hectares or twice as much as is the case at the present time.

High quality improvements are being carried out on an extensive scale in connection with the irrigation of reclaimed lands, the watering of pastures and also the installation of 3,500 kilometers of water lines for rural populated points. The amount of funds being allocated for the modernization of existing systems is greater by one third than the amount allocated previously. The present strategy for land renovation is first of all based upon the need for satisfying, by the end of this century, the population's requirements for vegetables and, secondly, solving the feed problem for livestock husbandry. The irrigated lands are providing a substantial increase in the production of grain, especially corn grain.

An urgent task concerned with branch development is that of raising the technical level for the construction and operation of reclamation projects, since this will make it possible to raise the labor productivity of both the land reclamation specialists and their partners out on the fields. Here we have in mind the automation of irrigation processes, two-way control over the drainage-moistening systems, combined applications to the soil of ameliorants, fertilizer and herbicides and the replacement of manual labor. Here success will depend largely upon improvements being realized in the equipment being supplied by industry.

Over the past 2 years, the conversion of land reclamation installations over to automatic control has been started jointly with Minpribor /Ministry of Instrument Making, Automation Equipment, and Control Systems/. Thus, in Saratov Oblast, an entire group of pumping stations and irrigation systems for the watering of 12,000 hectares is being serviced from a dispatcher control panel. The automatic equipment has replaced 100 skilled specialists. The modernization of a Kuban automatic wide-swath sprinkling machine is nearing completion in Rostov Oblast. It is being made easier to operate and lighter in weight.

The group use of sprinkling machines in accordance with so-called agro-meteorological parameters, that is, according to the temperature and humidity of the ground air layer, wind velocity, composition of the soil solution and intensity of evaporation of irrigation water, is proving to be extremely effective. Similarly, dozens of Fregat units were operated last summer in the Volga region and in the north Caucasus, where they produced economies in the use of water, fuel and fertilizer and provided nutrition to the plants at the times required. This has brought about a noticeable increase in yields. But the land reclamation specialists have gone even farther: together with the instrument makers, they created EVM /electronic computer/ information systems for large-scale irrigation systems. Electronic machines control the maintenance of programs concerned with high field productivity, while taking into account the intensity of irrigation and top dressings for the plants.

In other words, the programming of yields is proceeding well. In 1984 it was carried out on approximately 100,000 hectares. Before long this figure will reach the millions.

Question / It is a known fact that one third of the improved lands is still not producing the planned yields in agricultural crops. What is to be done in this regard?

Answer / In the long-term program for land reclamation operations, one of the principal operational trends for the future is the "highly efficient use of all irrigated and drained land, with each farm achieving its planned yields within the established periods." This requirement is the result of the search for new forms of relationships among field partners, introduced in the rural areas following the May (1982) Plenum of the CPSU Central Committee. The reorganization that has been started is making it possible to focus the interest of participants on achieving high productivity for the field crop husbandry operations and particularly because production planning and organization are now being carried out at the rayon level, where efforts directed towards raising the yields are concentrated.

At the same time, this task is still not the chief one for some agricultural and aquicultural organizations, kolkhozes, sovkhoses or workers attached to Sel'khoztekhnika or Sel'khozkhimiya. In a number of areas, for example, the irrigated lands are not receiving adequate moisture and thus they are being relegated to the status of non-irrigated lands. This is occurring owing to the fact that the sprinkling equipment at kolkhozes and sovkhoses is not always prepared for the first watering and it is serviced by untrained personnel. The absence of a repair base and specialists precludes the possibility of maintaining the land reclamation equipment fund in proper working order. Moreover, the farms are not allocating funds for these purposes and, as a result, the equipment wears out prematurely.

These shortcomings are presently being eliminated in an energetic manner. The RAPO's /rayon agroindustrial associations/ are establishing special accounts to which the monetary funds of kolkhozes, sovkhoses and their allied organizations are being transferred and cost accounting subunits of land reclamation specialists for the repair and maintenance of intra-farm networks and installations and schools for the training of land reclamation personnel are being created.

Shortfalls in yields obtained from restored lands are often caused by mismanagement, the slow introduction of industrial technologies and highly productive varieties and hybrids of agricultural crops and by low technological discipline. Thus, as emphasized during the October (1984) Plenum of the CPSU Central Committee, a large reserve is the extensive spread of the experience of leading farms, brigades and teams which not only achieved their planned yields from irrigated and drained lands but even exceeded them.

Extreme importance is attached to ensuring that the improved lands are provided with everything required to ensure the guaranteed fertility. In particular, here we have in mind the need for ensuring that the full fertilizer norm is applied to the fields and that pesticides are employed. But here the work is hampered by matters of secondary importance, with resources being distributed regardless of the return expected from a particular field. There are many cultivated tracts of land in the Russian Federation, especially tracts for the production of feed, which for many years have not been supplied with mineral

fertilizers, despite the fact that these lands require "food" and could rapidly provide a return for all resources so invested. Even this year, with the RAPO councils approving the plans for applying fertilizer, the norms for applying top dressings to reclaimed lands have been lowered in a number of oblasts. There is no justification for this.

At the present time, the drawing up of agreements between kolkhozes and sovkhozes, land reclamation specialists, agricultural chemists and subunits of Sel'khoztekhnika for the highly effective use of each restored hectare has been completed. Collaboration among allied workers is based upon a very progressive form for work organization -- the collective contract. For the very first time, the results of their labor will be evaluated according to the increasing productivity of a field. In many regions, for example in Stavropol Kray, the Altay region and in the Volga region, a strong foundation has been established for the new harvest in close contact with all services of the agroindustrial complex.

Question Is it not true that a shortage of water needed for irrigation and for other farm needs is being experienced today in some regions?

Answer If we are thinking in terms of the present level of development of irrigation in the Russian Federation, then water consumption per unit of irrigated area will undoubtedly be lowered. This will occur mainly as a result of the modernization of aquicultural systems and the conversion over to progressive watering methods. For example, irrigation by means of overlapping and furrows will recede into the past. An expansion will take place in the volume of repeated use of water in polder non-drainage systems, which are making it possible to eliminate the discharging of contaminants into rivers and other water areas.

Large-scale measures aimed at achieving economies in the use of fresh water are also being undertaken in other branches. The ministry is exercising control over all water-intensive production operations, particularly at chemical enterprises, for which maximum norms for the consumption and subsequent purification of water have been established. The requirements for the purification and utilization of livestock husbandry runoff water have been strengthened. The savings being realized in the use of water resources are satisfying to a certain degree the republic's developing irrigation requirements. However, in a number of regions such as western Siberia, the north Caucasus and the southern Urals, where the rates for the carrying out of aquicultural work are increasing sharply, one cannot count upon local sources. In order to supplement them, the redistribution of water resources must be started -- construction of the Great Stavropol Canal must be continued and work must be started on the Volga-Chogray Canal, the Yuzhno-Omsk Irrigation System and also on the Ob-Karasuk Canal for the flooding of steppe regions in Novosibirsk Oblast.

Question During the 11th Five-Year Plan, the branch's innovators and leading collectives accumulated valuable experience in organizing operations and in achieving effective interaction with partners in the agroindustrial complex. How is this experience being disseminated and what are the most effective forms for a competition?

/Answer/ During the years which have elapsed since the May (1982) Plenum of the CPSU Central Committee, the collective contract, a very progressive form for labor collaboration among partners, has gained a foothold in the agroindustrial complex. As a result of this collaboration, the land reclamation specialists, farmers and agricultural chemists in Leningrad Oblast have experienced great successes in achieving the final results and in raising the productivity of restored lands. In accordance with the recommendations of scientists, so-called passports have been prepared here for the planned yields to be obtained from each field, that is, following a thorough study of the status of the drainage network, the properties of the soil and the soil's nutrient content, a decision was made as to what actions remain to be carried out. At times, the missing quantity was very small -- individual microelements -- and the shortage was made up immediately.

It is by no means an accident that the indicators for vegetable production on irrigated lands in Leningrad Oblast are stable. This experience has been disseminated to other oblasts in the nonchernozem zone -- Vologda, Pskov and Kalinin. Here the partners initiate a change from mutual complaints to active mutual assistance. For example, soil improvement work in the complex had lagged behind for a number of years. Assisted by land reclamation specialists, many farms organized their own land reclamation detachments and our organizations provided them with the necessary equipment.

We are creating constantly active schools for leading experience. They are needed in particular for those specialists who are associated with the introduction of new developments. At a base of the Great Stavropol Canal, there is a school for the introduction into operations of a collective contract and it has been accepted in connection with all of its installations. The participation of future operations personnel in a competition for the placing of installations in operation ahead of schedule is making it possible to commence the development of new lands in advance. Effective collaboration based upon collective contracts is being developed among farmers and workers attached to Poliv rayon production associations for the purpose of achieving a high degree of effectiveness in the use of reclaimed lands. This experience is being studied in a school for leading methods in Krasnodar. In Rostov-Na-Donu there is a school for multiple-shift work organization in brigades of excavators.

In preparing to celebrate in a worthy manner the forthcoming 27th party congress, the leading collectives of reclamation specialists, together with the farmers, are laying the foundation for obtaining high yields during the final year of the 11th Five-Year Plan. Shock work is being performed by the developers of the Kulunda Steppe region, the builders of the Great Stavropol Canal and by the land reclamation specialists in Volgograd Oblast. New areas have been turned over for operation in the Volga region and the north Caucasus and irrigation and drainage-moistening systems in the nonchernozem zone, in the Far East and in the southern regions of the Russian Federation have been placed in a state of operational readiness. In a competition for ahead-of-schedule completion of the tasks of the five-year plan, highly productive work was performed by some eminent machine operators -- heroes of socialist labor N. Mishchenko and L. Bazarnyy, the initiators of a continuous contract N. Yerin and D. Nesluzhenko and others. All of the latter are working in

behalf of 1986. An excavator of the Marksvodstroy Trust, A. Deryugin, completed two five-year plans and was awarded the honorable title "Honored Land Reclamation Specialist of the USSR."

The branch's workers are fully resolved to carry out the important tasks assigned to them by the 26th CPSU Congress and the October (1984) Plenum of our party's central committee with regard to further raising the effectiveness of land reclamation operations and the use of such lands in the interest of increasing the country's food fund.

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